URS

April 3, 2013

Stephen F. Nightingale, P.E.
Manager, Permit Section
Bureau of Land
Illinois Department of Environmental Protection
1021 North Grand Avenue East
P.O. Box 19276
Springfield, IL 62794-9276

**Subject:** **Groundwater Monitoring Well and Vapor Monitoring Point Installation Report**
**1191150002 – Madison County**
**Equilon Enterprises LLC d/b/a Shell Oil Products US**
**Log No. B-43R**
**Roxana, Illinois**

Dear Mr. Nightingale;

URS Corporation, on behalf of Shell Oil Products US (SOPUS), is submitting the enclosed report for your review. This report documents the installation of groundwater monitoring wells and vapor monitoring points in the Village of Roxana, Illinois. This work was performed in response to the March 14, 2012 and September 13, 2012 letters from the Agency.

If you have any questions or require further information please contact Bob Billman at 314-429-0100.

Sincerely,
URS Corporation, on behalf of Shell Oil Products US

Wendy Pennington
Task Manager

Robert B. Billman
Senior Project Manager

Cc:

Kevin Dyer (SOPUS)
Repositories (Village Hall, Library, Website)
Shannon Haney (Greensfelder Hemker & Gale), 2 copies

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# ILLINOIS EPA RCRA CORRECTIVE ACTION CERTIFICATION

***This certification must accompany any document submitted to Illinois EPA in accordance with the corrective action requirements set forth in a facility's RCRA permit. The original and two copies of all documents submitted must be provided.***

**1.0 FACILITY IDENTIFICATION**

Name: WRB Refining LP - Wood River Refinery

County: Madison

Street Address: 900 South Central Ave.

Site No. (IEPA): 1191150002

City: Roxana, IL 62084

Site No. (USEPA): ILD 080 012 305

**2.0 OWNER INFORMATION**

Name: Not Applicable

Mailing Address:

**3.0 OPERATOR INFORMATION**

Equilon Enterprises LLC d/b/a Shell Oil Products US

17 Junction Drive, PMB #399

Glen Carbon, IL 62034

Contact Name:

Kevin Dyer

Contact Title:

Principal Program Manager

Phone No.:

618-288-7237

**4.0 TYPE OF SUBMISSION** (check applicable item and provide requested information, as applicable)

☐ RFI Phase I Workplan/Report
☐ RFI Phase II Workplan/Report
☐ CMP Report; Phase _____
☒ Other (describe):
Groundwater Monitoring Well & Vapor Monitoring Point Installation Report

IEPA Permit Log No. B-43R
Date of Last IEPA Letter on Project March 14, 2012
Log No. of Last IEPA Letter on Project B-43R-CA-25

Date of Submittal 4/3/13

Does this submittal include groundwater information: ☒ Yes ☐ No

**5.0 DESCRIPTION OF SUBMITTAL**: (briefly describe what is being submitted and its purpose)

Report describing the installation of vapor monitoring points and groundwater monitoring wells.

**6.0 DOCUMENTS SUBMITTED** (identify all documents in submittal, including cover letter; give dates of all documents)

Cover letter, RCRA Corrective Action Certification and Groundwater Monitoring Well & Vapor Monitoring Point Installation Report

**7.0 CERTIFICATION STATEMENT** - ***(This statement is part of the overall certification being provided by the owner/operator, professional and laboratory in Items 7.1, 7.2 and 7.3 below).*** The activities described in the subject submittals have been carried out in accordance with procedures approved by Illinois EPA. I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

**7.1** **OWNER/OPERATOR CERTIFICATION** (Must be completed for all submittals. Certification and signature requirements are set forth in 35 IAC 702.126.) All submittals pertaining to the corrective action requirements set forth in a RCRA Permit must be signed by the person designated below (or by a duly authorized representative of that person):

1. For a Corporation, by a principal executive officer of at least the level of vice-president.
2. For a Partnership or Sole Proprietorship, by a general partner or the proprietor, respectively.
3. For a Governmental Entity, by either a principal executive officer or a ranking elected official.

A person is a duly authorized representative only if:

1. the authorization is made in writing by a person described above; and
2. the written authorization is provided with this submittal (a copy of a previously submitted authorization can be used).

Owner Signature: _____ _____ (Date)

Title: _____

Operator Signature: Kevin E Allgyer 4/2/13 (Date)

Title: Principal Program Manager

**7.2** **PROFESSIONAL CERTIFICATION** ***(if necessary)*** - Work carried out in this submittal or the regulations may also be subject to other laws governing professional services, such as the Illinois Professional Land Surveyor Act of 1989, the Professional Engineering Practice Act of 1989, the Professional Geologist Licensing Act, and the Structural Engineering Licensing Act of 1989. No one is relieved from compliance with these laws and the regulations adopted pursuant to these laws. All work that falls within the scope and definitions of these laws must be performed in compliance with them. The Illinois EPA may refer any discovered violation of these laws to the appropriate regulating authority.

Professional's Signature: Robert B. Billman Date: 4/2/13

Professional's Name: Robert B. Billman

Professional's Address: URS Corporation

1001 Highlands Plaza Drive West

St. Louis, MO 63110

Professional's Phone No.: 314-743-4108

Professional's Seal:



7.3 **LABORATORY CERTIFICATION** *(if necessary)* - The sample collection, handling, preservation, preparation and analysis efforts for which this laboratory was responsible were carried out in accordance with procedures approved by Illinois EPA.

Name of Laboratory Accutest Laboratories

Mailing Address of Laboratory
495 Technology Center west
Marlborough, MA 01752

[signature] 4-1-13
Signature of Laboratory Responsible Officer — Date

Reza Tand / Lab Director
Name and Title of Laboratory Responsible Officer

**REPORT**

# GROUNDWATER MONITORING WELL AND VAPOR MONITORING POINT INSTALLATION

## Roxana, Illinois

*Prepared for:*

Shell Oil Products US
17 Junction Drive
PMB#399
Glen Carbon, Illinois 62034

April 2013

URS Corporation
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St. Louis, MO 63110
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**Project 21562580**

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Appendix E Soil Analytical Results from SVE Wells and VMPs (installed in 2011) **continued**

On behalf of Shell Oil Products US (SOPUS), URS Corporation (URS) is providing this report documenting installation activities during 4th Quarter 2012 (4Q12) for groundwater monitoring wells and vapor monitoring points (VMPs) in the Village of Roxana, Illinois (Village), WRB Refining, LP Wood River Refinery (WRR), and on Illinois Department of Transportation (IDOT) right-of-way. The installation of new groundwater monitoring wells was required by Conditions 2.a. and 2.b in the Illinois Environmental Protection Agency (IEPA) letter dated March 14, 2012 (IEPA, 2012a). The installation of new VMPs was required by Condition 10 in the IEPA letter dated September 13, 2012 (IEPA, 2012b).

SOPUS has been conducting a subsurface investigation in the Village in the area generally bounded by Illinois Route 111 (west), the west property boundary (a/k/a west fenceline) of the WRR (east), the alley north of First Street (north), and Roxana Public Works Yard (south) (**Figure 1**). For purposes of presentation in this report, the combined area is collectively referred as the "Investigation Area". Activities presented herein, including soil sampling, monitoring well installation and development, and VMP installation and development. Locations of the new groundwater monitoring wells and VMPs are shown on **Figure 2**.

These investigation activities were performed in general accordance with previously approved investigation procedures[1] and the IEPA conditions requiring the work. IEPA personnel visited the site multiple times during this scope of work to observe the field activities. No comments or exceptions were made by the IEPA personnel as to the field methodologies or the data being collected.

## 2.1 PRE-FIELD ACTIVITIES AND BOREHOLE CLEARANCE

Field activities for this investigation were conducted on the Village streets, alleys and rights-of-way; on the North Property of the WRR; and on IDOT right-of-way. The work in the Village was performed according to an access agreement between SOPUS and the Village, signed October 5, 2012. URS, on behalf of SOPUS, submitted a notification of planned work to the Village on November 9, 2012. The work on IDOT property was performed under an IDOT permit issued October 15, 2012.

Prior to the start of work, monitoring well locations were marked in the field with spray paint. A utility locate was arranged using Illinois' Joint Utility Locating Information for Excavators (JULIE) service. While JULIE facilitated identification of public utility lines, Roberts Environmental Drilling, Inc. (REDI) of Millstadt, Illinois was contracted to perform private utility locating services using ground penetrating radar (GPR) at each location.

Borehole clearance via an air-vacuum system (air-knife) was used to clear each location with respect to underground utility lines or other obstructions. Locations were cleared to a depth of approximately 10 feet below ground surface (bgs).

Subsurface material observations were made during borehole clearance activities by advancing a hand auger prior to air-knifing to collect grab samples and classify the soil. These observations were noted on the soil boring logs.

## 2.2 DRILLING AND SOIL SAMPLING

Drilling activities were performed by REDI with an 8040DT Geoprobe® rig at a total of sixteen locations (MW-16 through MW-22 and VMP-47 through VMP-54) in the Village, one replacement location (P-55R) along the western fenceline on the North Property of the WRR, and one location (VMP-55) on IDOT right-of-way (**Figure 1**).

[1] Investigation procedures previously approved by the IEPA can be found in the *Dissolved Phase Groundwater Investigation and P-60 Free Phase Product Delineation Report* dated February 2010, as well as subsequent correspondence and submittals.

A soil boring was advanced at each groundwater monitoring well and VMP location to log lithology and collect representative soil samples for analytical testing. Soil sampling was conducted via direct push, using a dual-tube sampling system. At the locations in the Village, the dual-tube system consisted of 3.5-inch diameter outer casing rods and a 5-foot long by 1.85-inch diameter clear acetate liner attached to 1-inch diameter inner rods. At the location within WRR, the dual-tube system consisted of 4.5-inch diameter outer casing rods and a 5-foot long by 3-inch diameter clear acetate liner attached to 1-inch diameter inner rods. The acetate liner and inner rods were advanced simultaneously with the outer casing. Once a sample was collected within the acetate liner, the inner rods and acetate liner were retrieved while the outer casing remained in place. The acetate liner was replaced and inner rods returned to the sampling depth, at which point the process was repeated. The soil borings were advanced to depths ranging between 30 and 50 feet bgs.

Subsurface stratigraphy was logged in accordance with applicable ASTM standards, Unified Soil Classification System (USCS) protocols and URS procedures. Noted soil attributes included color, particle size, consistency, moisture content, structure, plasticity, odor and organic content (if visible). Soil samples from each boring were visually evaluated for evidence of impact and screened in the field using a photoionization detector (PID) at 2-foot intervals. At the completion of each soil boring, monitoring wells or VMPs were installed within the boreholes. Soil boring logs are included in **Appendix A**.

IEPA's March 14, 2012 letter requested a shallow monitoring well adjacent to MW-16 to monitor a possible perched zone. There was no evidence of a perched zone at this location so a shallow well was not installed.

**Soil Samples**

Subsurface conditions consist primarily of a sand unit with occasional, intermittent silt and clay layers overlain by silty sand and fill/clay. Multiple soil samples were collected from each soil boring and submitted for laboratory analysis. A shallow sample was collected toward the top of the sand unit, and a deep sample was collected at the top of the expected groundwater monitoring well screen interval. In addition, a sample was collected between the shallow and deep samples from the interval exhibiting the highest PID readings. Refer to **Section 2.4** for sample handling and laboratory testing.

## 2.3 MONITORING WELL AND VMP INSTALLATION AND DEVELOPMENT

A total of seven groundwater monitoring wells and eight VMPs were installed in the Village, one replacement groundwater monitoring well was installed on the North Property of the WRR, and one VMP on IDOT right-of-way (**Figure 2**).

**Groundwater Monitoring Well Installation**

Upon completion of soil sample collection, groundwater monitoring wells were installed using 4.25-inch ID hollow stem augers, with the exception of Well P-55R. The eight groundwater monitoring wells were constructed using a 2-inch diameter Schedule 40 PVC casing, with 0.010-inch slotted PVC well screen. The groundwater monitoring well screens were set at similar depths, such that a portion of the screen extended above the water table observed at the time of drilling. The sand pack consisted of a combination of placed and/or native sand in the annular space, and extended to approximately 2 feet above the top of the monitoring well screen. A minimum 3-foot thick bentonite seal was placed above the sand pack. The borehole annulus was then grouted to the surface with cement-bentonite grout. Surface completions, including a locking expandable cap and flush-mount protector, were added. **Table 1** contains a summary of the groundwater monitoring well completion information. Construction diagrams for the groundwater monitoring wells installed are provided in **Appendix B**.

**Groundwaer Monitoring Well Development**

Once the groundwater monitoring well installations were complete, the wells were developed in order to remove fines from the screen and sand pack. The groundwater monitoring wells were developed by surging and pumping throughout the screened zone with a high-flow submersible pump. Five times the volume of water introduced during drilling of the lower approximately 25 feet of the boring was removed. In addition, five well volumes of water were also removed and until the water was visually sediment-free. Groundwater monitoring well development sheets containing data pertinent to water quality parameters and volume of water purged are provided in **Appendix C**.

**VMP Installation**

Upon completion of soil sample collection, VMPs were installed through the dual-tube casing. The nine VMPs were constructed using continuous 0.125-inch outside diameter (OD) diameter stainless-steel tubing connected with a 0.5-foot long stainless steel 0.375-inch OD port screen. The port screens were set with the top of the screens at 5-foot, 10-foot, 20-foot, and 30-foot bgs. The sand pack consisted of a combination of placed and/or native sand in the annular space, and extended to approximately 0.5-foot above and below the port screen. A bentonite chip seal was

placed above each sand pack, between each port screen. Surface completions, including a Swagelok® reducer to bring the connection size up to 0.25-inch diameter with closable valves and flush-mount protector, were added. **Table 2** contains a summary of the VMP completion information. Construction diagrams for the VMPs installed are provided in **Appendix B**.

**VMP Development**

Once the VMP installations were complete, the VMPs were developed in order to remove ambient air from the sand pack in the newly installed ports prior to sampling. Development was completed at all ports at VMP-47 through VMP-54. Only one port at VMP-55, VMP-55-20 was able to be developed. The remaining three ports were found to be submerged during two separate attempts at development. **Table 3** contains a summary of the VMP development information.

## 2.4 SAMPLE HANDLING AND LABORATORY TESTING

Soil samples were collected in laboratory-supplied containers, labeled in the field and information was recorded on the chains of custody (COC) forms at the time of collection. The COCs can be found with the analytical reports in **Appendix D**.

Upon collection and labeling, sample containers were immediately placed inside an iced cooler, packed in such a way as to help prevent breakage and maintain inside temperature at or below 4°C. The samples were then delivered via overnight courier, under the proper COC documentation, to the laboratory for analysis.

A total of 63 soil samples (50 investigative samples, 7 field duplicate pairs, 3 matrix spike/matrix spike duplicate (MS/MSD) sets), and 10 aqueous trip blank sets) were prepared and sent to Accutest Laboratories in Marlborough, MA. Samples were analyzed for volatile organic compounds (VOCs) by USEPA SW846 Methods 8260B and 8011.

## 2.5 HEALTH & SAFETY, DECONTAMINATION, AND IDW

**Health & Safety**

Groundwater monitoring well and VMP installation field activities were governed by the Well Installation/Soil Boring Roxana Investigation and Remediation Health and Safety Plan (HASP) dated November 12, 2012 (URS, 2012), as prepared by URS.

Prior to beginning site work and at the start of work each day, a daily safety meeting was held. The purpose of this meeting was to discuss the day's planned activities and to address any potential health and safety concerns. As a part of the daily safety meeting, job safety analyses (JSAs) were reviewed to address task specific safety concerns.

URS field personnel wore U.S. Environmental Protection Agency (USEPA) modified Level D personal protective equipment (PPE), which included hard hat, steel-toed boots, safety glasses, etc. In addition, work within the WRR was performed wearing flame retardant clothing (FRCs) per WRR requirements (in areas where required). During installation of well MW-22, PPE was upgraded to Level C due to borehole organic vapors in the breathing zone.

A photoionization detector (PID) with a 10.6 electron volt (eV) lamp, combustible gas indicator (CGI), and individual hydrogen sulfide gas detectors (for locations inside WRR) were used during the field activities to monitor air quality. A benzene gas monitor with a 9.8 eV lamp was available during field activities to monitor benzene levels, if necessary. Field instruments were calibrated prior to use each day in accordance with the manufacturer's specifications.

**Decontamination**

Field personnel and equipment underwent decontamination procedures to ensure the health and safety of those present, to maintain sample integrity, and to minimize cross contamination between sampling locations. Drilling equipment was decontaminated prior to its use at subsequent sampling locations with a high pressure hot water wash at a temporary decontamination pad at the Roxana Public Works Yard.

**Investigation Derived Waste**

Investigation Derived Waste (IDW), including soil cuttings, water generated during decontamination, PPE, and expendable materials were collected and disposed of properly.

- Expendable materials (e.g., disposable sampling equipment such as gloves and bailers) having a low probability of impact were collected in trash bags and disposed of as municipal waste.
- Soil cuttings from locations, except MW-22, were collected and placed directly in labeled and secured roll-offs for disposal at the Waste Management, Inc. Milam Recycling and Disposal Facility in Fairmont City, Illinois. Soil cuttings from MW-22 were placed in 55-gallon drums and were disposed by Veolia in Sauget, Illinois.
- Decontamination fluids and development water were collected and staged at the Village of Roxana Public Works yard in 55-gallon drums and disposed at the Heritage Environmental Services, LLC facility in Indianapolis, Indiana.

## 3.1 DATA QUALITY REVIEW AND DATA MANAGEMENT

Analytical data from groundwater monitoring well and VMP installation sampling activities were independently reviewed by URS.

URS conducted an independent Level III review of the analytical data following procedures outlined in the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (USEPA, 2008). Qualifiers were assigned to data when results from the review were outside control limits. These qualifiers are included in the data tables (**Table 3**) and were manually transcribed on the laboratory result pages (included in **Appendix D**).

Based on laboratory control/laboratory control duplicate (LCS/LCSD), matrix spike/matrix spike duplicate (MS/MSD), surrogate, holding time, and field duplicate criteria, the soil results reported were accepted for their intended use with the exception of the results for Method 8011 analytes, 1,2-Dibromo-3-chloropropane and 1,2-Dibromoethane in samples VMP-52-13 and VMP-52-25, that were rejected due to analyses completed outside of holding time criteria.

URS data reviews are included with the analytical data reports in **Appendix D**.

URS personnel kept a bound field notebook and sampling forms while performing sampling and oversight activities on-site. The following documentation was completed and supplements the COC records:

- Personnel conducting site activities, arrival and departure times
- Location where the work was performed
- Date, time, weather conditions, equipment, observations, etc.
- Safety documentation

Equipment calibrations, repairs and adjustments were documented daily on a calibration log sheet. Air monitoring was performed various times during sampling, with results recorded on a daily air monitoring log sheet. Organic vapor headspace readings were included on boring logs and COC forms.

Field data and documentation collected as part of this scope of work became part of the project file and the database management system, both maintained by URS.

## 3.2 SOIL SAMPLING RESULTS

A tabular summary of the analytical detections for the soil samples collected during groundwater monitoring well and VMP installations is presented in **Table 1.**

**Appendix E** contains tabular results and laboratory reports for analytical data from SVE well and VMP installations performed in 2011. These data had not previously been reported.

As required by the IEPA letter dated March 14, 2012, URS installed groundwater monitoring wells in the Village on behalf of SOPUS.

In accordance with Condition 2a, the following groundwater monitoring wells were installed along Chafer Street:

- No additional groundwater monitoring well was installed at ROST-4-PZ(F) as the well in place is already a 2-inch well;
- MW-17 was installed west of Well T-12;
- MW-18 was installed east of VMP-4;
- MW-19 was installed west of WRR well P-59;
- MW-20 was installed west of WRR well P-56; and
- MW-21 was installed west of WRR well P-57.

In accordance with Condition 2b, the following wells were installed in the Village:

- MW-16 was installed at the mid-point between the end of the block and ROST-21-PZ in the upper aquifer;
- No perched well was installed at MW-16 because there was no evidence of perched water at the time of well installation;
- MW-22 was installed adjacent to ROST-7-PZ at a depth greater than the zone monitored by ROST-7-PZ.

As required by the IEPA letter dated September 13, 2012, URS installed VMPs in the Village of Roxana on behalf of SOPUS.

- VMP-47 through VMP-55 were installed in accordance with the locations and depths listed in Condition 10.

Groundwater monitoring wells and VMPs presented in this report will be integrated into their respective monitoring programs.

Illinois Environmental Protection Agency (IEPA), 2012; (IEPA 2012a); *Letter (CA-25) providing approval with comments for Response to Agency Comments Provided in June 16, 2011 Letter*. Issued to Shell Oil Products US (SOPUS), dated March 14, 2012.

Illinois Environmental Protection Agency (IEPA), 2012; (IEPA 2012b); *Letter providing approval with conditions and modifications for several soil vapor extraction (SVE) system related documents*. Issued to Shell Oil Products US (SOPUS), dated September 13, 2012.

URS Corporation (URS), 2012 (URS, 2012); *Well Installation/Soil Boring Roxana Investigation and Remediation Health and Safety Plan (HASP)*; dated November 12, 2012.

US Environmental Protection Agency (USEPA), 2008 (USEPA, 2008); *Contract Laboratory Program National Functional Guidelines for Organic Methods Data Review*

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## Table 1
## Monitoring Well Completion Summary

| Monitoring Well Identification | Northing | Easting | Location | Surface Completion | Casing Diameter (in) | Top of Casing Elevation (ft MSL) | Ground Surface Elevation (ft MSL) | Height Above Ground Surface (ft) | Total Well Depth (ft btoc) | Bottom of Well Elevation (ft MSL) | Screened Interval | | | | Screen Length (ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | Depth (ft btoc) | | Elevation (ft MSL) | | |
| MW-16 | 792976.80 | 2322031.87 | Village of Roxana | FM | 2 | 443.39 | 443.76 | -0.37 | 47.31 | 396.08 | 37.06 | 47.06 | 406.33 | 396.33 | 10 |
| MW-17 | 793347.04 | 2322247.29 | Village of Roxana | FM | 2 | 441.57 | 441.83 | -0.26 | 49.54 | 392.03 | 34.29 | 49.29 | 407.28 | 392.28 | 15 |
| MW-18 | 793161.68 | 2322252.27 | Village of Roxana | FM | 2 | 442.04 | 442.37 | -0.33 | 50.17 | 391.87 | 34.92 | 49.92 | 407.12 | 392.12 | 15 |
| MW-19 | 793022.82 | 2322256.05 | Village of Roxana | FM | 2 | 442.77 | 443.13 | -0.36 | 51.59 | 391.18 | 36.34 | 51.34 | 406.43 | 391.43 | 15 |
| MW-20 | 792820.76 | 2322261.01 | Village of Roxana | FM | 2 | 443.67 | 444.02 | -0.35 | 51.13 | 392.54 | 35.88 | 50.88 | 407.79 | 392.79 | 15 |
| MW-21 | 792288.33 | 2322275.06 | Village of Roxana | FM | 2 | 443.81 | 444.10 | -0.29 | 50.26 | 393.55 | 35.01 | 50.01 | 408.80 | 393.80 | 15 |
| MW-22 | 793281.59 | 2321996.63 | Village of Roxana | FM | 2 | 442.16 | 442.49 | -0.33 | 48.13 | 394.03 | 37.88 | 47.88 | 404.28 | 394.28 | 10 |
| P-55R | 793803.04 | 2322278.76 | WRR - North Property | FM | 2 | 443.78 | 444.20 | -0.42 | 51.68 | 392.10 | 40.43 | 50.43 | 403.35 | 393.35 | 10 |
| ROST-3-MW | 793594.60 | 2321943.19 | Village of Roxana | FM | 2 | 442.29 | 442.66 | -0.37 | 48.43 | 394.23 | 38.94 | 48.94 | 403.35 | 393.35 | 10 |

**NOTES:**

1) Elevations are relative to the 1988 USGS datum.

2) FM = Flush Mounted Surface Completion

3) P-55R is a replacement well for P-55, which was removed on (date)

4) ROST-3-MW is a replacement well for ROST-3-PZ, which was removed on (date)

## Table 2
## Vapor Monitoring Point Completion Summary

| Monitoring Well Identification | Northing | Easting | Location | Surface Completion | Casing Diameter (in) | Ground Surface Elevation (ft MSL) | First Screened Interval | | | | Second Screened Interval | | | | Third Screened Interval | | | | Fourth Screened Interval | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Depth (ft btoc) | | Elevation (ft MSL) | | Depth (ft btoc) | | Elevation (ft MSL) | | Depth (ft btoc) | | Elevation (ft MSL) | | Depth (ft btoc) | | Elevation (ft MSL) | |
| VMP-47 | 794065.93 | 2322206.09 | Village of Roxana | FM | 0.125 | 445.57 | 5.00 | 5.50 | 440.57 | 440.07 | 10.0 | 10.5 | 435.6 | 435.1 | 20.0 | 20.5 | 425.6 | 425.1 | 30.0 | 30.5 | 415.57 | 415.07 |
| VMP-48 | 793748.22 | 2322150.34 | Village of Roxana | FM | 0.125 | 443.72 | 5.00 | 5.50 | 438.72 | 438.22 | 10.0 | 10.5 | 433.7 | 433.2 | 20.0 | 20.5 | 423.7 | 423.2 | 30.0 | 30.5 | 413.72 | 413.22 |
| VMP-49 | 793442.96 | 2322153.23 | Village of Roxana | FM | 0.125 | 442.35 | 5.00 | 5.50 | 437.35 | 436.85 | 10.0 | 10.5 | 432.4 | 431.9 | 20.0 | 20.5 | 422.4 | 421.9 | 30.0 | 30.5 | 412.35 | 411.85 |
| VMP-50 | 793150.29 | 2322166.22 | Village of Roxana | FM | 0.125 | 443.83 | 5.00 | 5.50 | 438.83 | 438.33 | 10.0 | 10.5 | 433.8 | 433.3 | 20.0 | 20.5 | 423.8 | 423.3 | 30.0 | 30.5 | 413.83 | 413.33 |
| VMP-51 | 792843.27 | 2322072.37 | Village of Roxana | FM | 0.125 | 444.27 | 5.00 | 5.50 | 439.27 | 438.77 | 10.0 | 10.5 | 434.3 | 433.8 | 20.0 | 20.5 | 424.3 | 423.8 | 30.0 | 30.5 | 414.27 | 413.77 |
| VMP-52 | 792527.81 | 2322166.68 | Village of Roxana | FM | 0.125 | 443.73 | 5.00 | 5.50 | 438.73 | 438.23 | 10.0 | 10.5 | 433.7 | 433.2 | 20.0 | 20.5 | 423.7 | 423.2 | 30.0 | 30.5 | 413.73 | 413.23 |
| VMP-53 | 792228.78 | 2322169.96 | Village of Roxana | FM | 0.125 | 443.55 | 5.00 | 5.50 | 438.55 | 438.05 | 10.0 | 10.5 | 433.6 | 433.1 | 20.0 | 20.5 | 423.6 | 423.1 | 30.0 | 30.5 | 413.55 | 413.05 |
| VMP-54 | 792230.14 | 2321840.44 | Village of Roxana | FM | 0.125 | 433.65 | 5.00 | 5.50 | 428.65 | 428.15 | 10.0 | 10.5 | 423.7 | 423.2 | 20.0 | 20.5 | 413.7 | 413.2 | 30.0 | 30.5 | 403.65 | 403.15 |
| VMP-55 | 791879.41 | 2321828.60 | Frontage Road | FM | 0.125 | 430.55 | 5.00 | 5.50 | 425.55 | 425.05 | 10.0 | 10.5 | 420.6 | 420.1 | 20.0 | 20.5 | 410.6 | 410.1 | 30.0 | 30.5 | 400.55 | 400.05 |

**NOTES:**

1) Elevations are relative to the 1988 USGS datum.

2) FM = Flush Mounted Surface Completion

SEE LAST PAGE OF TABLE FOR NOTES

# Table 3
## Summary of Soil Analytical Data

| Location | Sample ID | Depth | Sample Date | 1,1,1,2-Tetrachloroethane | | | 1,1,1-Trichloroethane (Methyl chloroform) | | | 1,1,2,2-Tetrachloroethane | | | 1,1,2-Trichloroethane | | | 1,1-Dichloroethane | | | 1,1-Dichloroethene | | | 1,1-Dichloropropene | | | 1,2,3-Trichlorobenzene | | | 1,2,3-Trichloropropane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| MW-16 | MW-16-14 | 14 ft | 12/4/2012 | < 0.56 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | |
| | MW-16-27 | 27 ft | 12/4/2012 | < 0.56 | U | | < 0.22 | U | | < 0.22 | U | | < 0.22 | U | | < 0.22 | U | | < 0.22 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | |
| | MW-16-37 | 37 ft | 12/4/2012 | < 0.27 | U | | < 0.11 | U | | < 0.11 | U | | < 0.11 | U | | < 0.11 | U | | < 0.11 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | |
| MW-17 | MW-17-14 | 14 ft | 11/26/2012 | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | |
| | MW-17-21 | 21 ft | 11/26/2012 | < 0.0051 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | |
| | MW-17-35 | 35 ft | 11/26/2012 | < 3.3 | U | | < 1.3 | U | | < 1.3 | U | | < 1.3 | U | | < 1.3 | U | | < 1.3 | U | | < 3.3 | U | | < 3.3 | U | | < 3.3 | U | |
| MW-18 | MW-18-12 | 12 ft | 11/28/2012 | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | |
| | MW-18-18 | 18 ft | 11/28/2012 | < 7.5 | U | | < 3 | U | | < 3 | U | | < 3 | U | | < 3 | U | | < 3 | U | | < 7.5 | U | | < 7.5 | U | | < 7.5 | U | |
| | MW-18-39 | 39 ft | 11/28/2012 | < 0.58 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.58 | U | | 0.254 | J | | < 0.58 | U | |
| MW-19 | MW-19-13 | 13 ft | 12/3/2012 | < 13 | U | | < 5.2 | U | | < 5.2 | U | | < 5.2 | U | | < 5.2 | U | | < 5.2 | U | | < 13 | U | | < 13 | U | | < 13 | U | |
| | MW-19-20 | 20 ft | 12/3/2012 | < 0.74 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.74 | U | | < 0.74 | U | | < 0.74 | U | |
| | MW-19-32 | 32 ft | 12/3/2012 | < 0.67 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.67 | U | | < 0.67 | U | | < 0.67 | U | |
| MW-20 | MW-20-11 | 11 ft | 12/5/2012 | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | |
| | MW-20-21 | 21 ft | 12/5/2012 | < 0.62 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.62 | U | | < 0.62 | U | | < 0.62 | U | |
| | MW-20-41 | 41 ft | 12/5/2012 | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | |
| MW-21 | MW-21-21 | 21 ft | 12/6/2012 | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | |
| | MW-21-31 | 31 ft | 12/6/2012 | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | |
| | MW-21-31-DUP | 31 ft | 12/6/2012 | < 2 | U | | < 0.81 | U | | < 0.81 | U | | < 0.81 | U | | < 0.81 | U | | < 0.81 | U | | < 2 | U | | < 2 | U | | < 2 | U | |
| | MW-21-41 | 41 ft | 12/6/2012 | < 0.0081 | U | | < 0.0032 | U | | < 0.0032 | U | | < 0.0032 | U | | < 0.0032 | U | | < 0.0032 | U | | < 0.0081 | U | | < 0.0081 | U | | < 0.0081 | U | |
| MW-22 | MW-22-12 | 12 ft | 11/29/2012 | < 0.0064 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | |
| | MW-22-12-DUP | 12 ft | 11/29/2012 | < 0.0076 | U | | < 0.003 | U | | < 0.003 | U | | < 0.003 | U | | < 0.003 | U | | < 0.003 | U | | < 0.0076 | U | | < 0.0076 | U | | < 0.0076 | U | |
| | MW-22-23 | 23 ft | 11/29/2012 | < 12 | U | | < 4.6 | U | | < 4.6 | U | | < 4.6 | U | | < 4.6 | U | | < 4.6 | U | | < 12 | U | | < 12 | U | | < 12 | U | |
| | MW-22-23-DUP | 23 ft | 11/29/2012 | < 13 | U | | < 5.1 | U | | < 5.1 | U | | < 5.1 | U | | < 5.1 | U | | < 5.1 | U | | < 13 | U | | < 13 | U | | < 13 | U | |
| | MW-22-39 | 39 ft | 11/29/2012 | < 0.77 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | < 0.77 | U | | < 0.77 | U | | < 0.77 | U | |
| P-55R | P-55R-43 | 43 ft | 1/10/2013 | < 0.93 | U | | < 0.37 | U | | < 0.37 | U | | < 0.37 | U | | < 0.37 | U | | < 0.37 | U | | < 0.93 | U | | < 0.93 | U | | < 0.93 | U | |
| | P-55R-51 | 51 ft | 1/10/2013 | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| VMP-47 | VMP-47-12 | 12 ft | 12/10/2012 | < 0.0059 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | |
| | VMP-47-19 | 19 ft | 12/10/2012 | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | |
| | VMP-47-29 | 29 ft | 12/10/2012 | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | |
| VMP-48 | VMP-48-13 | 13 ft | 12/11/2012 | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | |
| | VMP-48-21 | 21 ft | 12/11/2012 | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | |
| | VMP-48-27 | 27 ft | 12/11/2012 | < 0.0071 | U | | < 0.0029 | U | | < 0.0029 | U | | < 0.0029 | U | | < 0.0029 | U | | < 0.0029 | U | | < 0.0071 | U | | < 0.0071 | U | | < 0.0071 | U | |
| VMP-49 | VMP-49-11 | 11 ft | 12/12/2012 | < 0.0067 | U | UJ | < 0.0027 | U | UJ | < 0.0027 | U | UJ | < 0.0027 | U | UJ | < 0.0027 | U | UJ | < 0.0027 | U | UJ | < 0.0067 | U | UJ | < 0.0067 | U | UJ | < 0.0067 | U | UJ |
| | VMP-49-21 | 21 ft | 12/12/2012 | < 0.0095 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0095 | U | | < 0.0095 | U | | < 0.0095 | U | |
| | VMP-49-31 | 31 ft | 12/12/2012 | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | |
| VMP-50 | VMP-50-13 | 13 ft | 12/11/2012 | < 0.0091 | U | | < 0.0036 | U | | < 0.0036 | U | | < 0.0036 | U | | < 0.0036 | U | | < 0.0036 | U | | < 0.0091 | U | | < 0.0091 | U | | < 0.0091 | U | |
| | VMP-50-21 | 21 ft | 12/11/2012 | < 3 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 3 | U | | < 3 | U | UJ | < 3 | U | |
| | VMP-50-21-DUP | 21 ft | 12/11/2012 | < 2.7 | U | | < 1.1 | U | | < 1.1 | U | | < 1.1 | U | | < 1.1 | U | | < 1.1 | U | | < 2.7 | U | | < 2.7 | U | UJ | < 2.7 | U | |
| | VMP-50-29 | 29 ft | 12/11/2012 | < 0.0048 | U | | < 0.0019 | U | | < 0.0019 | U | | < 0.0019 | U | | < 0.0019 | U | | < 0.0019 | U | | < 0.0048 | U | | < 0.0048 | U | | < 0.0048 | U | |
| VMP-51 | VMP-51-14 | 14 ft | 12/12/2012 | < 0.0056 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | |
| | VMP-51-21 | 21 ft | 12/12/2012 | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | |
| | VMP-51-31 | 31 ft | 12/12/2012 | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| VMP-52 | VMP-52-13 | 13 ft | 12/13/2012 | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| | VMP-52-25 | 25 ft | 12/13/2012 | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | |
| | VMP-52-25-DUP | 25 ft | 12/13/2012 | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | |
| | VMP-52-29 | 29 ft | 12/13/2012 | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | |
| VMP-53 | VMP-53-15 | 15 ft | 12/13/2012 | < 0.0054 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| | VMP-53-27 | 27 ft | 12/13/2012 | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | |
| | VMP-53-31 | 31 ft | 12/13/2012 | < 0.0051 | U | | < 0.002 | U | | < 0.002 | U | | < 0.002 | U | | < 0.002 | U | | < 0.002 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | |
| VMP-54 | VMP-54-15 | 15 ft | 12/14/2012 | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | |
| | VMP-54-15-DUP | 15 ft | 12/14/2012 | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | |
| | VMP-54-25 | 25 ft | 12/14/2012 | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | |
| | VMP-54-31 | 31 ft | 12/14/2012 | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | |
| VMP-55 | VMP-55-13 | 13 ft | 12/17/2012 | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | |
| | VMP-55-25 | 25 ft | 12/17/2012 | < 0.0051 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | |
| | VMP-55-31 | 31 ft | 12/17/2012 | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | |
| | VMP-55-31-DUP | 31 ft | 12/17/2012 | < 0.0051 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | |

SEE LAST PAGE OF TABLE FOR NOTES

# Table 3
## Summary of Soil Analytical Data

| Location | Sample ID | Depth | Sample Date | 1,2,4-Trichlorobenzene | | | 1,2,4-Trimethylbenzene | | | 1,2-Dibromo-3-chloropropane (DBCP) | | | 1,2-Dibromoethane | | | 1,2-Dichlorobenzene | | | 1,2-Dichloroethane | | | 1,2-Dichloropropane | | | 1,3,5-Trimethylbenzene | | | 1,3-Dichlorobenzene | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| MW-16 | MW-16-14 | 14 ft | 12/4/2012 | < 0.56 | U | | 0.0894 | J | | < 0.0026 | U | | < 0.0026 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | 0.0408 | J | | < 0.23 | U | |
| | MW-16-27 | 27 ft | 12/4/2012 | < 0.56 | U | | 0.0467 | J | | < 0.0025 | U | | < 0.0025 | U | | < 0.22 | U | | < 0.22 | U | | < 0.22 | U | | 0.0286 | J | | < 0.22 | U | |
| | MW-16-37 | 37 ft | 12/4/2012 | < 0.27 | U | | 0.0197 | J | | < 0.0026 | U | | < 0.0026 | U | | < 0.11 | U | | < 0.11 | U | | < 0.11 | U | | 0.0131 | J | | < 0.11 | U | |
| MW-17 | MW-17-14 | 14 ft | 11/26/2012 | < 0.0052 | U | | < 0.0052 | U | | < 0.0027 | U | | < 0.0027 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | |
| | MW-17-21 | 21 ft | 11/26/2012 | < 0.0051 | U | | < 0.0051 | U | | < 0.0027 | U | | < 0.0027 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0021 | U | |
| | MW-17-35 | 35 ft | 11/26/2012 | < 3.3 | U | | 120 | | | < 0.0032 | U | | < 0.0032 | U | | < 1.3 | U | | < 1.3 | U | | < 1.3 | U | | 30.5 | | | < 1.3 | U | |
| MW-18 | MW-18-12 | 12 ft | 11/28/2012 | < 0.0056 | U | | < 0.0056 | U | | < 0.0027 | U | | < 0.0027 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | |
| | MW-18-18 | 18 ft | 11/28/2012 | < 7.5 | U | | 396 | | | < 0.0033 | U | | < 0.0033 | U | | < 3 | U | | < 3 | U | | < 3 | U | | 90.1 | | | < 3 | U | |
| | MW-18-39 | 39 ft | 11/28/2012 | 0.114 | J | | 12.2 | | | < 0.0026 | U | | < 0.0026 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | 3.32 | | | < 0.23 | U | |
| MW-19 | MW-19-13 | 13 ft | 12/3/2012 | < 13 | U | | 219 | | | < 0.0033 | U | | 0.0537 | | | < 5.2 | U | | < 5.2 | U | | < 5.2 | U | | 60.4 | | | < 5.2 | U | |
| | MW-19-20 | 20 ft | 12/3/2012 | < 0.74 | U | | 9.21 | | | < 0.0035 | U | | < 0.0035 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | 2.45 | | | < 0.29 | U | |
| | MW-19-32 | 32 ft | 12/3/2012 | < 0.67 | U | | 2.21 | | | < 0.0033 | U | | < 0.0033 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | 0.644 | J | | < 0.27 | U | |
| MW-20 | MW-20-11 | 11 ft | 12/5/2012 | < 0.57 | U | | < 0.57 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | |
| | MW-20-21 | 21 ft | 12/5/2012 | < 0.62 | U | | < 0.62 | U | | < 0.0031 | U | | < 0.0031 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.62 | U | | < 0.25 | U | |
| | MW-20-41 | 41 ft | 12/5/2012 | < 0.57 | U | | < 0.57 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | |
| MW-21 | MW-21-21 | 21 ft | 12/6/2012 | < 0.57 | U | | < 0.57 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | |
| | MW-21-31 | 31 ft | 12/6/2012 | < 0.57 | U | | < 0.57 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | |
| | MW-21-31-DUP | 31 ft | 12/6/2012 | < 2 | U | | < 2 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.81 | U | | < 0.81 | U | | < 0.81 | U | | < 2 | U | | < 0.81 | U | |
| | MW-21-41 | 41 ft | 12/6/2012 | < 0.0081 | U | | 0.00093 | J | | < 0.003 | U | | < 0.003 | U | | < 0.0032 | U | | < 0.0032 | U | | < 0.0032 | U | | < 0.0081 | U | | < 0.0032 | U | |
| MW-22 | MW-22-12 | 12 ft | 11/29/2012 | < 0.0064 | U | | 0.00075 | J | | < 0.0032 | U | | < 0.0032 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0064 | U | | < 0.0026 | U | |
| | MW-22-12-DUP | 12 ft | 11/29/2012 | < 0.0076 | U | | 0.00084 | J | | < 0.0032 | U | | < 0.0032 | U | | < 0.003 | U | | < 0.003 | U | | < 0.003 | U | | < 0.0076 | U | | < 0.003 | U | |
| | MW-22-23 | 23 ft | 11/29/2012 | < 12 | U | | 381 | | | < 0.0031 | U | | < 0.0031 | U | | < 4.6 | U | | < 4.6 | U | | < 4.6 | U | | 111 | | | < 4.6 | U | |
| | MW-22-23-DUP | 23 ft | 11/29/2012 | < 13 | U | | 348 | | | < 0.0031 | U | | < 0.0031 | U | | < 5.1 | U | | < 5.1 | U | | < 5.1 | U | | 99.2 | | | < 5.1 | U | |
| | MW-22-39 | 39 ft | 11/29/2012 | < 0.77 | U | | 5.33 | | | < 0.0032 | U | | < 0.0032 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | 3.07 | | | < 0.31 | U | |
| P-55R | P-55R-43 | 43 ft | 1/10/2013 | < 0.93 | U | | 30.1 | | | < 0.0039 | U | | < 0.0039 | U | | < 0.37 | U | | < 0.37 | U | | < 0.37 | U | | 7.68 | | | < 0.37 | U | |
| | P-55R-51 | 51 ft | 1/10/2013 | < 0.0054 | U | | 0.0144 | | | < 0.0028 | U | | < 0.0028 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | 0.0051 | J | | < 0.0022 | U | |
| VMP-47 | VMP-47-12 | 12 ft | 12/10/2012 | < 0.0059 | U | | < 0.0059 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0059 | U | | < 0.0023 | U | |
| | VMP-47-19 | 19 ft | 12/10/2012 | < 0.0057 | U | | < 0.0057 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | |
| | VMP-47-29 | 29 ft | 12/10/2012 | < 0.0056 | U | | < 0.0056 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | |
| VMP-48 | VMP-48-13 | 13 ft | 12/11/2012 | < 0.0057 | U | | < 0.0057 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | |
| | VMP-48-21 | 21 ft | 12/11/2012 | < 0.0058 | U | | < 0.0058 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | |
| | VMP-48-27 | 27 ft | 12/11/2012 | < 0.0071 | U | | < 0.0071 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0029 | U | | < 0.0029 | U | | < 0.0029 | U | | < 0.0071 | U | | < 0.0029 | U | |
| VMP-49 | VMP-49-11 | 11 ft | 12/12/2012 | < 0.0067 | U | UJ | < 0.0067 | U | UJ | < 0.0029 | U | UJ | < 0.0029 | U | UJ | < 0.0027 | U | UJ | < 0.0027 | U | UJ | < 0.0027 | U | UJ | < 0.0067 | U | UJ | < 0.0027 | U | UJ |
| | VMP-49-21 | 21 ft | 12/12/2012 | < 0.0095 | U | | < 0.0095 | U | | < 0.0034 | U | | < 0.0034 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0095 | U | | < 0.0038 | U | |
| | VMP-49-31 | 31 ft | 12/12/2012 | < 0.0053 | U | | < 0.0053 | U | | < 0.003 | U | | < 0.003 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | |
| VMP-50 | VMP-50-13 | 13 ft | 12/11/2012 | < 0.0091 | U | | < 0.0091 | U | | < 0.0029 | U | | < 0.0029 | U | | < 0.0036 | U | | < 0.0036 | U | | < 0.0036 | U | | < 0.0091 | U | | < 0.0036 | U | |
| | VMP-50-21 | 21 ft | 12/11/2012 | < 3 | U | | 146 | | | < 0.0029 | U | | < 0.0029 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | 41.6 | | | < 1.2 | U | |
| | VMP-50-21-DUP | 21 ft | 12/11/2012 | < 2.7 | U | | 134 | | | < 0.0027 | U | | < 0.0027 | U | | < 1.1 | U | | < 1.1 | U | | < 1.1 | U | | 38.6 | | | < 1.1 | U | |
| | VMP-50-29 | 29 ft | 12/11/2012 | < 0.0048 | U | | 0.246 | | | < 0.0026 | U | | < 0.0026 | U | | < 0.0019 | U | | < 0.0019 | U | | < 0.0019 | U | | 0.0676 | | | < 0.0019 | U | |
| VMP-51 | VMP-51-14 | 14 ft | 12/12/2012 | < 0.0056 | U | | < 0.0056 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0056 | U | | < 0.0023 | U | |
| | VMP-51-21 | 21 ft | 12/12/2012 | < 0.0052 | U | | < 0.0052 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | |
| | VMP-51-31 | 31 ft | 12/12/2012 | < 0.0054 | U | | < 0.0054 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | |
| VMP-52 | VMP-52-13 | 13 ft | 12/13/2012 | < 0.0054 | U | | < 0.0054 | U | | < 0.0026 | U | R | < 0.0026 | U | R | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | |
| | VMP-52-25 | 25 ft | 12/13/2012 | < 0.0055 | U | | < 0.0055 | U | | < 0.0026 | U | R | < 0.0026 | U | R | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | |
| | VMP-52-25-DUP | 25 ft | 12/13/2012 | < 0.0053 | U | | < 0.0053 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | |
| | VMP-52-29 | 29 ft | 12/13/2012 | < 0.0052 | U | | < 0.0052 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | |
| VMP-53 | VMP-53-15 | 15 ft | 12/13/2012 | < 0.0054 | U | | < 0.0054 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0054 | U | | < 0.0021 | U | |
| | VMP-53-27 | 27 ft | 12/13/2012 | < 0.0052 | U | | < 0.0052 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | |
| | VMP-53-31 | 31 ft | 12/13/2012 | < 0.0051 | U | | < 0.0051 | U | | < 0.0031 | U | | < 0.0031 | U | | < 0.002 | U | | < 0.002 | U | | < 0.002 | U | | < 0.0051 | U | | < 0.002 | U | |
| VMP-54 | VMP-54-15 | 15 ft | 12/14/2012 | < 0.0057 | U | | < 0.0057 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | |
| | VMP-54-15-DUP | 15 ft | 12/14/2012 | < 0.0055 | U | | < 0.0055 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | |
| | VMP-54-25 | 25 ft | 12/14/2012 | < 0.0053 | U | | < 0.0053 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | |
| | VMP-54-31 | 31 ft | 12/14/2012 | < 0.0053 | U | | < 0.0053 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | |
| VMP-55 | VMP-55-13 | 13 ft | 12/17/2012 | < 0.0052 | U | | < 0.0052 | U | | < 0.0032 | U | | < 0.0032 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | |
| | VMP-55-25 | 25 ft | 12/17/2012 | < 0.0051 | U | | < 0.0051 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0021 | U | |
| | VMP-55-31 | 31 ft | 12/17/2012 | < 0.0053 | U | | < 0.0053 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | |
| | VMP-55-31-DUP | 31 ft | 12/17/2012 | < 0.0051 | U | | < 0.0051 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0021 | U | |

SEE LAST PAGE OF TABLE FOR NOTES

# Table 3
## Summary of Soil Analytical Data

| Location | Sample ID | Depth | Sample Date | 1,3-Dichloropropane | | | 1,4-Dichlorobenzene | | | 1,4-Dioxane | | | 2,2-Dichloropropane | | | 2-Butanone | | | 2-Chloroethyl vinyl ether | | | 2-Chlorotoluene | | | 2-Hexanone (Methyl N-Butyl Ketone) | | | 4-Chlorotoluene | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| MW-16 | MW-16-14 | 14 ft | 12/4/2012 | < 0.56 | U | | < 0.23 | U | | < 2.8 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | |
| | MW-16-27 | 27 ft | 12/4/2012 | < 0.56 | U | | < 0.22 | U | | < 2.8 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | |
| | MW-16-37 | 37 ft | 12/4/2012 | < 0.27 | U | | < 0.11 | U | | < 1.4 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | |
| MW-17 | MW-17-14 | 14 ft | 11/26/2012 | < 0.0052 | U | | < 0.0021 | U | | < 0.026 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | |
| | MW-17-21 | 21 ft | 11/26/2012 | < 0.0051 | U | | < 0.0021 | U | | < 0.026 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | |
| | MW-17-35 | 35 ft | 11/26/2012 | < 3.3 | U | | < 1.3 | U | | < 16 | U | | < 3.3 | U | | < 3.3 | U | | < 3.3 | U | | < 3.3 | U | | < 3.3 | U | UJ | < 3.3 | U | |
| MW-18 | MW-18-12 | 12 ft | 11/28/2012 | < 0.0056 | U | | < 0.0022 | U | | < 0.028 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | |
| | MW-18-18 | 18 ft | 11/28/2012 | < 7.5 | U | | < 3 | U | | < 38 | U | | < 7.5 | U | | < 7.5 | U | | < 7.5 | U | | < 7.5 | U | | < 7.5 | U | UJ | < 7.5 | U | |
| | MW-18-39 | 39 ft | 11/28/2012 | < 0.58 | U | | < 0.23 | U | | < 2.9 | U | | < 0.58 | U | | < 0.58 | U | | < 0.58 | U | | < 0.58 | U | | < 0.58 | U | UJ | < 0.58 | U | |
| MW-19 | MW-19-13 | 13 ft | 12/3/2012 | < 13 | U | | < 5.2 | U | | < 65 | U | | < 13 | U | | < 13 | U | | < 13 | U | | < 13 | U | | < 13 | U | UJ | < 13 | U | |
| | MW-19-20 | 20 ft | 12/3/2012 | < 0.74 | U | | < 0.29 | U | | < 3.7 | U | | < 0.74 | U | | < 0.74 | U | | < 0.74 | U | | < 0.74 | U | | < 0.74 | U | UJ | < 0.74 | U | |
| | MW-19-32 | 32 ft | 12/3/2012 | < 0.67 | U | | < 0.27 | U | | < 3.3 | U | | < 0.67 | U | | < 0.67 | U | | < 0.67 | U | | < 0.67 | U | | < 0.67 | U | UJ | < 0.67 | U | |
| MW-20 | MW-20-11 | 11 ft | 12/5/2012 | < 0.57 | U | | < 0.23 | U | | < 2.9 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | UJ | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | |
| | MW-20-21 | 21 ft | 12/5/2012 | < 0.62 | U | | < 0.25 | U | | < 3.1 | U | | < 0.62 | U | | < 0.62 | U | | < 0.62 | U | UJ | < 0.62 | U | | < 0.62 | U | | < 0.62 | U | |
| | MW-20-41 | 41 ft | 12/5/2012 | < 0.57 | U | | < 0.23 | U | | < 2.9 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | UJ | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | |
| MW-21 | MW-21-21 | 21 ft | 12/6/2012 | < 0.57 | U | | < 0.23 | U | | < 2.9 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | |
| | MW-21-31 | 31 ft | 12/6/2012 | < 0.57 | U | | < 0.23 | U | | < 2.9 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | |
| | MW-21-31-DUP | 31 ft | 12/6/2012 | < 2 | U | | < 0.81 | U | | < 10 | U | | < 2 | U | | < 2 | U | | < 2 | U | | < 2 | U | | < 2 | U | | < 2 | U | |
| | MW-21-41 | 41 ft | 12/6/2012 | < 0.0081 | U | | < 0.0032 | U | | < 0.04 | U | | < 0.0081 | U | | < 0.0081 | U | | < 0.0081 | U | | < 0.0081 | U | | < 0.0081 | U | | < 0.0081 | U | |
| MW-22 | MW-22-12 | 12 ft | 11/29/2012 | < 0.0064 | U | | < 0.0026 | U | | < 0.032 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | |
| | MW-22-12-DUP | 12 ft | 11/29/2012 | < 0.0076 | U | | < 0.003 | U | | < 0.038 | U | | < 0.0076 | U | | < 0.0076 | U | | < 0.0076 | U | | < 0.0076 | U | | < 0.0076 | U | | < 0.0076 | U | |
| | MW-22-23 | 23 ft | 11/29/2012 | < 12 | U | | < 4.6 | U | | < 58 | U | | < 12 | U | | < 12 | U | | < 12 | U | | < 12 | U | | < 12 | U | | < 12 | U | |
| | MW-22-23-DUP | 23 ft | 11/29/2012 | < 13 | U | | < 5.1 | U | | < 64 | U | | < 13 | U | | < 13 | U | | < 13 | U | | < 13 | U | | < 13 | U | | < 13 | U | |
| | MW-22-39 | 39 ft | 11/29/2012 | < 0.77 | U | | < 0.31 | U | | < 3.8 | U | | < 0.77 | U | | < 0.77 | U | | < 0.77 | U | | < 0.77 | U | | < 0.77 | U | | < 0.77 | U | |
| P-55R | P-55R-43 | 43 ft | 1/10/2013 | < 0.93 | U | | < 0.37 | U | | < 4.6 | U | | < 0.93 | U | | < 0.93 | U | UJ | < 0.93 | U | | < 0.93 | U | | < 0.93 | U | UJ | < 0.93 | U | |
| | P-55R-51 | 51 ft | 1/10/2013 | < 0.0054 | U | | < 0.0022 | U | | < 0.027 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| VMP-47 | VMP-47-12 | 12 ft | 12/10/2012 | < 0.0059 | U | | < 0.0023 | U | | < 0.029 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | |
| | VMP-47-19 | 19 ft | 12/10/2012 | < 0.0057 | U | | < 0.0023 | U | | < 0.028 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | |
| | VMP-47-29 | 29 ft | 12/10/2012 | < 0.0056 | U | | < 0.0022 | U | | < 0.028 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | |
| VMP-48 | VMP-48-13 | 13 ft | 12/11/2012 | < 0.0057 | U | | < 0.0023 | U | | < 0.029 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | |
| | VMP-48-21 | 21 ft | 12/11/2012 | < 0.0058 | U | | < 0.0023 | U | | < 0.029 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | |
| | VMP-48-27 | 27 ft | 12/11/2012 | < 0.0071 | U | | < 0.0029 | U | | < 0.036 | U | | < 0.0071 | U | | < 0.0071 | U | | < 0.0071 | U | | < 0.0071 | U | | < 0.0071 | U | | < 0.0071 | U | |
| VMP-49 | VMP-49-11 | 11 ft | 12/12/2012 | < 0.0067 | U | UJ | < 0.0027 | U | UJ | < 0.033 | U | UJ | < 0.0067 | U | UJ | < 0.0067 | U | UJ | < 0.0067 | U | UJ | < 0.0067 | U | UJ | < 0.0067 | U | UJ | < 0.0067 | U | UJ |
| | VMP-49-21 | 21 ft | 12/12/2012 | < 0.0095 | U | | < 0.0038 | U | | < 0.047 | U | | < 0.0095 | U | | < 0.0095 | U | | < 0.0095 | U | | < 0.0095 | U | | < 0.0095 | U | | < 0.0095 | U | |
| | VMP-49-31 | 31 ft | 12/12/2012 | < 0.0053 | U | | < 0.0021 | U | | < 0.027 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | |
| VMP-50 | VMP-50-13 | 13 ft | 12/11/2012 | < 0.0091 | U | | < 0.0036 | U | | < 0.045 | U | | < 0.0091 | U | | < 0.0091 | U | | < 0.0091 | U | | < 0.0091 | U | | < 0.0091 | U | | < 0.0091 | U | |
| | VMP-50-21 | 21 ft | 12/11/2012 | < 3 | U | | < 1.2 | U | | < 15 | U | | < 3 | U | | < 3 | U | UJ | < 3 | U | | < 3 | U | | < 3 | U | | < 3 | U | |
| | VMP-50-21-DUP | 21 ft | 12/11/2012 | < 2.7 | U | | < 1.1 | U | | < 14 | U | | < 2.7 | U | | < 2.7 | U | UJ | < 2.7 | U | | < 2.7 | U | | < 2.7 | U | | < 2.7 | U | |
| | VMP-50-29 | 29 ft | 12/11/2012 | < 0.0048 | U | | < 0.0019 | U | | < 0.024 | U | | < 0.0048 | U | | < 0.0048 | U | | < 0.0048 | U | | < 0.0048 | U | | < 0.0048 | U | | < 0.0048 | U | |
| VMP-51 | VMP-51-14 | 14 ft | 12/12/2012 | 0.0012 | J | | < 0.0023 | U | | < 0.028 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | |
| | VMP-51-21 | 21 ft | 12/12/2012 | < 0.0052 | U | | < 0.0021 | U | | < 0.026 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | |
| | VMP-51-31 | 31 ft | 12/12/2012 | < 0.0054 | U | | < 0.0022 | U | | < 0.027 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| VMP-52 | VMP-52-13 | 13 ft | 12/13/2012 | < 0.0054 | U | | < 0.0022 | U | | < 0.027 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| | VMP-52-25 | 25 ft | 12/13/2012 | < 0.0055 | U | | < 0.0022 | U | | < 0.027 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | |
| | VMP-52-25-DUP | 25 ft | 12/13/2012 | < 0.0053 | U | | < 0.0021 | U | | < 0.027 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | |
| | VMP-52-29 | 29 ft | 12/13/2012 | < 0.0052 | U | | < 0.0021 | U | | < 0.026 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | |
| VMP-53 | VMP-53-15 | 15 ft | 12/13/2012 | < 0.0054 | U | | < 0.0021 | U | | < 0.027 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| | VMP-53-27 | 27 ft | 12/13/2012 | < 0.0052 | U | | < 0.0021 | U | | < 0.026 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | |
| | VMP-53-31 | 31 ft | 12/13/2012 | < 0.0051 | U | | < 0.002 | U | | < 0.026 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | |
| VMP-54 | VMP-54-15 | 15 ft | 12/14/2012 | < 0.0057 | U | | < 0.0023 | U | | < 0.029 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | |
| | VMP-54-15-DUP | 15 ft | 12/14/2012 | < 0.0055 | U | | < 0.0022 | U | | < 0.028 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | |
| | VMP-54-25 | 25 ft | 12/14/2012 | < 0.0053 | U | | < 0.0021 | U | | < 0.026 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | |
| | VMP-54-31 | 31 ft | 12/14/2012 | < 0.0053 | U | | < 0.0021 | U | | < 0.027 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | |
| VMP-55 | VMP-55-13 | 13 ft | 12/17/2012 | < 0.0052 | U | | < 0.0021 | U | | < 0.026 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | |
| | VMP-55-25 | 25 ft | 12/17/2012 | < 0.0051 | U | | < 0.0021 | U | | < 0.026 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | |
| | VMP-55-31 | 31 ft | 12/17/2012 | < 0.0053 | U | | < 0.0021 | U | | < 0.026 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | |
| | VMP-55-31-DUP | 31 ft | 12/17/2012 | < 0.0051 | U | | < 0.0021 | U | | < 0.026 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | |

SEE LAST PAGE OF TABLE FOR NOTES

# Table 3
## Summary of Soil Analytical Data

| Location | Sample ID | Depth | Sample Date | 4-Methyl-2-pentanone (Methyl Isobutyl Ketone) | | | Acetone | | | Acrolein | | | Acrylonitrile | | | Benzene | | | Bromobenzene | | | Bromochloromethane | | | Bromodichloromethane | | | Bromoform | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| MW-16 | MW-16-14 | 14 ft | 12/4/2012 | < 0.56 | U | | < 0.56 | U | | < 2.8 | U | UJ | < 2.8 | U | | < 0.056 | U | | < 0.56 | U | | < 0.56 | U | | < 0.23 | U | | < 0.23 | U | |
| | MW-16-27 | 27 ft | 12/4/2012 | < 0.56 | U | | < 0.56 | U | | < 2.8 | U | UJ | < 2.8 | U | | < 0.056 | U | | < 0.56 | U | | < 0.56 | U | | < 0.22 | U | | < 0.22 | U | |
| | MW-16-37 | 37 ft | 12/4/2012 | < 0.27 | U | | < 0.27 | U | | < 1.4 | U | UJ | < 1.4 | U | | < 0.027 | U | | < 0.27 | U | | < 0.27 | U | | < 0.11 | U | | < 0.11 | U | |
| MW-17 | MW-17-14 | 14 ft | 11/26/2012 | < 0.0052 | U | | < 0.0052 | U | UJ | < 0.026 | U | UJ | < 0.026 | U | | < 0.00052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | |
| | MW-17-21 | 21 ft | 11/26/2012 | < 0.0051 | U | | < 0.0051 | U | UJ | < 0.026 | U | UJ | < 0.026 | U | | < 0.00051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0021 | U | | < 0.0021 | U | |
| | MW-17-35 | 35 ft | 11/26/2012 | < 3.3 | U | | < 3.3 | U | UJ | < 16 | U | UJ | < 16 | U | | 2.91 | | | < 3.3 | U | | < 3.3 | U | | < 1.3 | U | | < 1.3 | U | |
| MW-18 | MW-18-12 | 12 ft | 11/28/2012 | < 0.0056 | U | | < 0.0056 | U | UJ | < 0.028 | U | UJ | < 0.028 | U | | 0.00041 | J | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | MW-18-18 | 18 ft | 11/28/2012 | < 7.5 | U | | < 7.5 | U | UJ | < 38 | U | UJ | < 38 | U | | 3.27 | | | < 7.5 | U | | < 7.5 | U | | < 3 | U | | < 3 | U | |
| | MW-18-39 | 39 ft | 11/28/2012 | < 0.58 | U | | < 0.58 | U | UJ | < 2.9 | U | UJ | < 2.9 | U | | 0.0365 | J | | < 0.58 | U | | < 0.58 | U | | < 0.23 | U | | < 0.23 | U | |
| MW-19 | MW-19-13 | 13 ft | 12/3/2012 | < 13 | U | UJ | < 13 | U | UJ | < 65 | U | UJ | < 65 | U | | 73.3 | | | < 13 | U | | < 13 | U | | < 5.2 | U | | < 5.2 | U | |
| | MW-19-20 | 20 ft | 12/3/2012 | < 0.74 | U | UJ | < 0.74 | U | UJ | 1.94 | J | J | < 3.7 | U | | 3.59 | | | < 0.74 | U | | < 0.74 | U | | < 0.29 | U | | < 0.29 | U | |
| | MW-19-32 | 32 ft | 12/3/2012 | < 0.67 | U | UJ | < 0.67 | U | UJ | < 3.3 | U | UJ | < 3.3 | U | | 0.562 | | | < 0.67 | U | | < 0.67 | U | | < 0.27 | U | | < 0.27 | U | |
| MW-20 | MW-20-11 | 11 ft | 12/5/2012 | < 0.57 | U | UJ | < 0.57 | U | | < 2.9 | U | UJ | < 2.9 | U | | < 0.057 | U | | < 0.57 | U | | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | |
| | MW-20-21 | 21 ft | 12/5/2012 | < 0.62 | U | UJ | < 0.62 | U | | < 3.1 | U | UJ | < 3.1 | U | | 0.0585 | J | | < 0.62 | U | | < 0.62 | U | | < 0.25 | U | | < 0.25 | U | |
| | MW-20-41 | 41 ft | 12/5/2012 | < 0.57 | U | UJ | < 0.57 | U | | < 2.9 | U | UJ | < 2.9 | U | | < 0.057 | U | | < 0.57 | U | | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | |
| MW-21 | MW-21-21 | 21 ft | 12/6/2012 | < 0.57 | U | | < 0.57 | U | UJ | < 2.9 | U | UJ | < 2.9 | U | | < 0.057 | U | | < 0.57 | U | | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | |
| | MW-21-31 | 31 ft | 12/6/2012 | < 0.57 | U | | < 0.57 | U | UJ | < 2.9 | U | UJ | < 2.9 | U | | < 0.057 | U | | < 0.57 | U | | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | |
| | MW-21-31-DUP | 31 ft | 12/6/2012 | < 2 | U | | < 2 | U | UJ | < 10 | U | UJ | < 10 | U | | < 0.2 | U | | < 2 | U | | < 2 | U | | < 0.81 | U | | < 0.81 | U | |
| | MW-21-41 | 41 ft | 12/6/2012 | < 0.0081 | U | | < 0.0081 | U | UJ | < 0.04 | U | UJ | < 0.04 | U | | 0.282 | | | < 0.0081 | U | | < 0.0081 | U | | < 0.0032 | U | | < 0.0032 | U | |
| MW-22 | MW-22-12 | 12 ft | 11/29/2012 | < 0.0064 | U | | < 0.0064 | U | UJ | < 0.032 | U | UJ | < 0.032 | U | | 0.0023 | | | < 0.0064 | U | | < 0.0064 | U | | < 0.0026 | U | | < 0.0026 | U | |
| | MW-22-12-DUP | 12 ft | 11/29/2012 | < 0.0076 | U | | < 0.0076 | U | UJ | < 0.038 | U | UJ | < 0.038 | U | | 0.0024 | | | < 0.0076 | U | | < 0.0076 | U | | < 0.003 | U | | < 0.003 | U | |
| | MW-22-23 | 23 ft | 11/29/2012 | < 12 | U | | < 12 | U | UJ | < 58 | U | | < 58 | U | | < 1.2 | U | | < 12 | U | | < 12 | U | | < 4.6 | U | | < 4.6 | U | |
| | MW-22-23-DUP | 23 ft | 11/29/2012 | < 13 | U | | < 13 | U | UJ | < 64 | U | | < 64 | U | | < 1.3 | U | | < 13 | U | | < 13 | U | | < 5.1 | U | | < 5.1 | U | |
| | MW-22-39 | 39 ft | 11/29/2012 | < 0.77 | U | | < 0.77 | U | UJ | < 3.8 | U | | < 3.8 | U | | < 0.077 | U | | < 0.77 | U | | < 0.77 | U | | < 0.31 | U | | < 0.31 | U | |
| P-55R | P-55R-43 | 43 ft | 1/10/2013 | < 0.93 | U | | < 0.93 | U | UJ | < 4.6 | U | UJ | < 4.6 | U | | 4.25 | | | < 0.93 | U | | < 0.93 | U | | < 0.37 | U | | < 0.37 | U | |
| | P-55R-51 | 51 ft | 1/10/2013 | < 0.0054 | U | | < 0.0054 | U | | < 0.027 | U | | < 0.027 | U | | 0.0019 | | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | |
| VMP-47 | VMP-47-12 | 12 ft | 12/10/2012 | < 0.0059 | U | | < 0.0059 | U | | < 0.029 | U | UJ | < 0.029 | U | | 0.0017 | | | < 0.0059 | U | | < 0.0059 | U | | < 0.0023 | U | | < 0.0023 | U | |
| | VMP-47-19 | 19 ft | 12/10/2012 | < 0.0057 | U | | < 0.0057 | U | | < 0.028 | U | UJ | < 0.028 | U | | 0.0017 | | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | |
| | VMP-47-29 | 29 ft | 12/10/2012 | < 0.0056 | U | | < 0.0056 | U | | < 0.028 | U | UJ | < 0.028 | U | | 0.0008 | | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | |
| VMP-48 | VMP-48-13 | 13 ft | 12/11/2012 | < 0.0057 | U | | < 0.0057 | U | | < 0.029 | U | UJ | < 0.029 | U | | 0.0011 | | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | |
| | VMP-48-21 | 21 ft | 12/11/2012 | < 0.0058 | U | | < 0.0058 | U | | < 0.029 | U | UJ | < 0.029 | U | | 0.0011 | | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | |
| | VMP-48-27 | 27 ft | 12/11/2012 | < 0.0071 | U | | < 0.0071 | U | | < 0.036 | U | UJ | < 0.036 | U | | 0.0014 | | | < 0.0071 | U | | < 0.0071 | U | | < 0.0029 | U | | < 0.0029 | U | |
| VMP-49 | VMP-49-11 | 11 ft | 12/12/2012 | < 0.0067 | U | UJ | < 0.0067 | U | UJ | < 0.033 | U | UJ | < 0.033 | U | UJ | < 0.00067 | U | UJ | < 0.0067 | U | UJ | < 0.0067 | U | UJ | < 0.0027 | U | UJ | < 0.0027 | U | UJ |
| | VMP-49-21 | 21 ft | 12/12/2012 | < 0.0095 | U | | < 0.0095 | U | | < 0.047 | U | UJ | < 0.047 | U | | 0.002 | | | < 0.0095 | U | | < 0.0095 | U | | < 0.0038 | U | | < 0.0038 | U | |
| | VMP-49-31 | 31 ft | 12/12/2012 | < 0.0053 | U | | < 0.0053 | U | | < 0.027 | U | UJ | < 0.027 | U | | 0.0023 | | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | |
| VMP-50 | VMP-50-13 | 13 ft | 12/11/2012 | < 0.0091 | U | | < 0.0091 | U | | < 0.045 | U | UJ | < 0.045 | U | | 0.0017 | | | < 0.0091 | U | | < 0.0091 | U | | < 0.0036 | U | | < 0.0036 | U | |
| | VMP-50-21 | 21 ft | 12/11/2012 | < 3 | U | | < 3 | U | UJ | < 15 | U | | < 15 | U | | < 0.3 | U | | < 3 | U | | < 3 | U | | < 1.2 | U | | < 1.2 | U | |
| | VMP-50-21-DUP | 21 ft | 12/11/2012 | < 2.7 | U | | < 2.7 | U | UJ | < 14 | U | | < 14 | U | | < 0.27 | U | | < 2.7 | U | | < 2.7 | U | | < 1.1 | U | | < 1.1 | U | |
| | VMP-50-29 | 29 ft | 12/11/2012 | < 0.0048 | U | | < 0.0048 | U | | < 0.024 | U | UJ | < 0.024 | U | | 0.0037 | | | < 0.0048 | U | | < 0.0048 | U | | < 0.0019 | U | | < 0.0019 | U | |
| VMP-51 | VMP-51-14 | 14 ft | 12/12/2012 | < 0.0056 | U | | < 0.0056 | U | | < 0.028 | U | UJ | < 0.028 | U | | 0.00065 | | | < 0.0056 | U | | < 0.0056 | U | | < 0.0023 | U | | < 0.0023 | U | |
| | VMP-51-21 | 21 ft | 12/12/2012 | < 0.0052 | U | | < 0.0052 | U | UJ | < 0.026 | U | UJ | < 0.026 | U | | 0.00086 | | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | |
| | VMP-51-31 | 31 ft | 12/12/2012 | < 0.0054 | U | | < 0.0054 | U | UJ | < 0.027 | U | UJ | < 0.027 | U | | 0.00084 | | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | |
| VMP-52 | VMP-52-13 | 13 ft | 12/13/2012 | < 0.0054 | U | | < 0.0054 | U | UJ | < 0.027 | U | UJ | < 0.027 | U | | < 0.00054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | VMP-52-25 | 25 ft | 12/13/2012 | < 0.0055 | U | | < 0.0055 | U | UJ | < 0.027 | U | UJ | < 0.027 | U | | < 0.00055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | VMP-52-25-DUP | 25 ft | 12/13/2012 | < 0.0053 | U | | < 0.0053 | U | UJ | < 0.027 | U | UJ | < 0.027 | U | | < 0.00053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | |
| | VMP-52-29 | 29 ft | 12/13/2012 | < 0.0052 | U | | < 0.0052 | U | UJ | < 0.026 | U | UJ | < 0.026 | U | | < 0.00052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | |
| VMP-53 | VMP-53-15 | 15 ft | 12/13/2012 | < 0.0054 | U | | < 0.158 | | UJ | < 0.027 | U | UJ | < 0.027 | U | | 0.0014 | | | < 0.0054 | U | | < 0.0054 | U | | < 0.0021 | U | | < 0.0021 | U | |
| | VMP-53-27 | 27 ft | 12/13/2012 | < 0.0052 | U | | < 0.0773 | | UJ | < 0.026 | U | UJ | < 0.026 | U | | 0.0007 | | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | |
| | VMP-53-31 | 31 ft | 12/13/2012 | < 0.0051 | U | | < 0.0051 | U | | < 0.026 | U | UJ | < 0.026 | U | | 0.0012 | | | < 0.0051 | U | | < 0.0051 | U | | < 0.002 | U | | < 0.002 | U | |
| VMP-54 | VMP-54-15 | 15 ft | 12/14/2012 | < 0.0057 | U | | < 0.0057 | U | | < 0.029 | U | UJ | < 0.029 | U | | < 0.00057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | |
| | VMP-54-15-DUP | 15 ft | 12/14/2012 | < 0.0055 | U | | < 0.0055 | U | | < 0.028 | U | UJ | < 0.028 | U | | < 0.00055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | VMP-54-25 | 25 ft | 12/14/2012 | < 0.0053 | U | | < 0.0053 | U | | < 0.026 | U | UJ | < 0.026 | U | | 0.00071 | | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | |
| | VMP-54-31 | 31 ft | 12/14/2012 | < 0.0053 | U | | < 0.0053 | U | | < 0.027 | U | UJ | < 0.027 | U | | 0.00074 | | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | |
| VMP-55 | VMP-55-13 | 13 ft | 12/17/2012 | < 0.0052 | U | | < 0.0052 | U | UJ | < 0.026 | U | | < 0.026 | U | | < 0.00052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | |
| | VMP-55-25 | 25 ft | 12/17/2012 | < 0.0051 | U | | < 0.0051 | U | UJ | < 0.026 | U | | < 0.026 | U | | 0.0035 | | | < 0.0051 | U | | < 0.0051 | U | | < 0.0021 | U | | < 0.0021 | U | |
| | VMP-55-31 | 31 ft | 12/17/2012 | < 0.0053 | U | | < 0.0339 | | UJ | < 0.026 | U | | < 0.026 | U | | < 0.00053 | U | UJ | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | |
| | VMP-55-31-DUP | 31 ft | 12/17/2012 | < 0.0051 | U | | < 0.0051 | U | UJ | < 0.026 | U | | < 0.026 | U | | 0.317 | | J | < 0.0051 | U | | < 0.0051 | U | | < 0.0021 | U | | < 0.0021 | U | |

SEE LAST PAGE OF TABLE FOR NOTES

# Table 3
## Summary of Soil Analytical Data

| Location | Sample ID | Depth | Sample Date | Bromomethane | | | Carbon disulfide | | | Carbon tetrachloride | | | Chlorobenzene | | | Chlorodibromomethane | | | Chloroethane | | | Chloroform | | | Chloromethane | | | cis-1,2-Dichloroethene | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| MW-16 | MW-16-14 | 14 ft | 12/4/2012 | < 0.23 | U | | < 0.56 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.56 | U | | < 0.23 | U | | < 0.56 | U | | < 0.23 | U | |
| | MW-16-27 | 27 ft | 12/4/2012 | < 0.22 | U | | < 0.56 | U | | < 0.22 | U | | < 0.22 | U | | < 0.22 | U | | < 0.56 | U | | < 0.22 | U | | < 0.56 | U | | < 0.22 | U | |
| | MW-16-37 | 37 ft | 12/4/2012 | < 0.11 | U | | < 0.27 | U | | < 0.11 | U | | < 0.11 | U | | < 0.11 | U | | < 0.27 | U | | < 0.11 | U | | < 0.27 | U | | < 0.11 | U | |
| MW-17 | MW-17-14 | 14 ft | 11/26/2012 | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | |
| | MW-17-21 | 21 ft | 11/26/2012 | < 0.0021 | U | | < 0.0051 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0021 | U | |
| | MW-17-35 | 35 ft | 11/26/2012 | < 1.3 | U | | < 3.3 | U | | < 1.3 | U | | < 1.3 | U | | < 1.3 | U | | < 3.3 | U | | < 1.3 | U | | < 3.3 | U | | < 1.3 | U | |
| MW-18 | MW-18-12 | 12 ft | 11/28/2012 | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | |
| | MW-18-18 | 18 ft | 11/28/2012 | < 3 | U | | < 7.5 | U | | < 3 | U | | < 3 | U | | < 3 | U | | < 7.5 | U | | < 3 | U | | < 7.5 | U | | < 3 | U | |
| | MW-18-39 | 39 ft | 11/28/2012 | < 0.23 | U | | < 0.58 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.58 | U | | < 0.23 | U | | < 0.58 | U | | < 0.23 | U | |
| MW-19 | MW-19-13 | 13 ft | 12/3/2012 | < 5.2 | U | | < 13 | U | | < 5.2 | U | | < 5.2 | U | | < 5.2 | U | | < 13 | U | | < 5.2 | U | | < 13 | U | | < 5.2 | U | |
| | MW-19-20 | 20 ft | 12/3/2012 | < 0.29 | U | | < 0.74 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.74 | U | | < 0.29 | U | | < 0.74 | U | | < 0.29 | U | |
| | MW-19-32 | 32 ft | 12/3/2012 | < 0.27 | U | | < 0.67 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.67 | U | | < 0.27 | U | | < 0.67 | U | | < 0.27 | U | |
| MW-20 | MW-20-11 | 11 ft | 12/5/2012 | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | |
| | MW-20-21 | 21 ft | 12/5/2012 | < 0.25 | U | | < 0.62 | U | | < 0.25 | U | | 0.0401 | J | | < 0.25 | U | | < 0.62 | U | | < 0.25 | U | | < 0.62 | U | | < 0.25 | U | |
| | MW-20-41 | 41 ft | 12/5/2012 | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | |
| MW-21 | MW-21-21 | 21 ft | 12/6/2012 | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | |
| | MW-21-31 | 31 ft | 12/6/2012 | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | |
| | MW-21-31-DUP | 31 ft | 12/6/2012 | < 0.81 | U | | < 2 | U | | < 0.81 | U | | < 0.81 | U | | < 0.81 | U | | < 2 | U | | < 0.81 | U | | < 2 | U | | < 0.81 | U | |
| | MW-21-41 | 41 ft | 12/6/2012 | < 0.0032 | U | | < 0.0081 | U | | < 0.0032 | U | | < 0.0032 | U | | < 0.0032 | U | | < 0.0081 | U | | < 0.0032 | U | | < 0.0081 | U | | < 0.0032 | U | |
| MW-22 | MW-22-12 | 12 ft | 11/29/2012 | < 0.0026 | U | | < 0.0064 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0064 | U | | < 0.0026 | U | | < 0.0064 | U | | < 0.0026 | U | |
| | MW-22-12-DUP | 12 ft | 11/29/2012 | < 0.003 | U | | 0.0021 | J | | < 0.003 | U | | < 0.003 | U | | < 0.003 | U | | < 0.0076 | U | | < 0.003 | U | | < 0.0076 | U | | < 0.003 | U | |
| | MW-22-23 | 23 ft | 11/29/2012 | < 4.6 | U | | < 12 | U | | < 4.6 | U | | < 4.6 | U | | < 4.6 | U | | < 12 | U | | < 4.6 | U | | < 12 | U | | < 4.6 | U | |
| | MW-22-23-DUP | 23 ft | 11/29/2012 | < 5.1 | U | | < 13 | U | | < 5.1 | U | | < 5.1 | U | | < 5.1 | U | | < 13 | U | | < 5.1 | U | | < 13 | U | | < 5.1 | U | |
| | MW-22-39 | 39 ft | 11/29/2012 | < 0.31 | U | | < 0.77 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | < 0.77 | U | | < 0.31 | U | | < 0.77 | U | | < 0.31 | U | |
| P-55R | P-55R-43 | 43 ft | 1/10/2013 | < 0.37 | U | | < 0.93 | U | | < 0.37 | U | | < 0.37 | U | | < 0.37 | U | | < 0.93 | U | | < 0.37 | U | | < 0.93 | U | | < 0.37 | U | |
| | P-55R-51 | 51 ft | 1/10/2013 | < 0.0022 | U | | 0.0046 | J | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | |
| VMP-47 | VMP-47-12 | 12 ft | 12/10/2012 | < 0.0023 | U | | < 0.0059 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0059 | U | | < 0.0023 | U | | < 0.0059 | U | | < 0.0023 | U | |
| | VMP-47-19 | 19 ft | 12/10/2012 | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | |
| | VMP-47-29 | 29 ft | 12/10/2012 | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | |
| VMP-48 | VMP-48-13 | 13 ft | 12/11/2012 | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | |
| | VMP-48-21 | 21 ft | 12/11/2012 | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | |
| | VMP-48-27 | 27 ft | 12/11/2012 | < 0.0029 | U | | 0.0017 | J | | < 0.0029 | U | | < 0.0029 | U | | < 0.0029 | U | | < 0.0071 | U | | < 0.0029 | U | | < 0.0071 | U | | < 0.0029 | U | |
| VMP-49 | VMP-49-11 | 11 ft | 12/12/2012 | < 0.0027 | U | UJ | < 0.0067 | U | UJ | < 0.0027 | U | UJ | < 0.0027 | U | UJ | < 0.0027 | U | UJ | < 0.0067 | U | UJ | < 0.0027 | U | UJ | < 0.0067 | U | UJ | < 0.0027 | U | UJ |
| | VMP-49-21 | 21 ft | 12/12/2012 | < 0.0038 | U | | < 0.0095 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0095 | U | | < 0.0038 | U | | < 0.0095 | U | | < 0.0038 | U | |
| | VMP-49-31 | 31 ft | 12/12/2012 | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | |
| VMP-50 | VMP-50-13 | 13 ft | 12/11/2012 | < 0.0036 | U | | < 0.0091 | U | | < 0.0036 | U | | < 0.0036 | U | | < 0.0036 | U | | < 0.0091 | U | | < 0.0036 | U | | < 0.0091 | U | | < 0.0036 | U | |
| | VMP-50-21 | 21 ft | 12/11/2012 | < 1.2 | U | | < 3 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 3 | U | | < 1.2 | U | | < 3 | U | | < 1.2 | U | |
| | VMP-50-21-DUP | 21 ft | 12/11/2012 | < 1.1 | U | | < 2.7 | U | | < 1.1 | U | | < 1.1 | U | | < 1.1 | U | | < 2.7 | U | | < 1.1 | U | | < 2.7 | U | | < 1.1 | U | |
| | VMP-50-29 | 29 ft | 12/11/2012 | < 0.0019 | U | | < 0.0048 | U | | < 0.0019 | U | | < 0.0019 | U | | < 0.0019 | U | | < 0.0048 | U | | < 0.0019 | U | | < 0.0048 | U | | < 0.0019 | U | |
| VMP-51 | VMP-51-14 | 14 ft | 12/12/2012 | < 0.0023 | U | | < 0.0056 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0056 | U | | < 0.0023 | U | | < 0.0056 | U | | < 0.0023 | U | |
| | VMP-51-21 | 21 ft | 12/12/2012 | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | |
| | VMP-51-31 | 31 ft | 12/12/2012 | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | |
| VMP-52 | VMP-52-13 | 13 ft | 12/13/2012 | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | |
| | VMP-52-25 | 25 ft | 12/13/2012 | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | |
| | VMP-52-25-DUP | 25 ft | 12/13/2012 | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | |
| | VMP-52-29 | 29 ft | 12/13/2012 | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | |
| VMP-53 | VMP-53-15 | 15 ft | 12/13/2012 | < 0.0021 | U | | < 0.0054 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0054 | U | | < 0.0021 | U | | < 0.0054 | U | | < 0.0021 | U | |
| | VMP-53-27 | 27 ft | 12/13/2012 | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | |
| | VMP-53-31 | 31 ft | 12/13/2012 | < 0.002 | U | | < 0.0051 | U | | < 0.002 | U | | < 0.002 | U | | < 0.002 | U | | < 0.0051 | U | | < 0.002 | U | | < 0.0051 | U | | < 0.002 | U | |
| VMP-54 | VMP-54-15 | 15 ft | 12/14/2012 | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | |
| | VMP-54-15-DUP | 15 ft | 12/14/2012 | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | |
| | VMP-54-25 | 25 ft | 12/14/2012 | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | |
| | VMP-54-31 | 31 ft | 12/14/2012 | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | |
| VMP-55 | VMP-55-13 | 13 ft | 12/17/2012 | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | |
| | VMP-55-25 | 25 ft | 12/17/2012 | < 0.0021 | U | | < 0.0051 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0021 | U | |
| | VMP-55-31 | 31 ft | 12/17/2012 | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | |
| | VMP-55-31-DUP | 31 ft | 12/17/2012 | < 0.0021 | U | | < 0.0051 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0021 | U | |

SEE LAST PAGE OF TABLE FOR NOTES

# Table 3
## Summary of Soil Analytical Data

| Location | Sample ID | Depth | Sample Date | cis-1,3-Dichloropropene | | | Cymene (p-Isopropyltoluene) | | | Dibromomethane | | | Dichlorodifluoromethane | | | Dichloromethane (Methylene chloride) | | | Ethyl methacrylate | | | Ethylbenzene | | | Hexachlorobutadiene | | | Isopropylbenzene (Cumene) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| MW-16 | MW-16-14 | 14 ft | 12/4/2012 | < 0.23 | U | | < 0.56 | U | | < 0.56 | U | | < 0.23 | U | | < 0.23 | U | | < 0.56 | U | | 0.032 | J | | < 0.56 | U | | < 0.56 | U | |
| | MW-16-27 | 27 ft | 12/4/2012 | < 0.22 | U | | < 0.56 | U | | < 0.56 | U | | < 0.22 | U | | < 0.22 | U | | < 0.56 | U | | < 0.22 | U | | < 0.56 | U | | < 0.56 | U | |
| | MW-16-37 | 37 ft | 12/4/2012 | < 0.11 | U | | < 0.27 | U | | < 0.27 | U | | < 0.11 | U | | < 0.11 | U | | < 0.27 | U | | < 0.11 | U | | < 0.27 | U | | < 0.27 | U | |
| MW-17 | MW-17-14 | 14 ft | 11/26/2012 | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0013 | J | U | < 0.0052 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | |
| | MW-17-21 | 21 ft | 11/26/2012 | < 0.0021 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0021 | U | | < 0.0014 | J | U | < 0.0051 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0051 | U | |
| | MW-17-35 | 35 ft | 11/26/2012 | < 1.3 | U | | 1.17 | J | | < 3.3 | U | | < 1.3 | U | | < 1.3 | U | | < 3.3 | U | | 11.8 | | | < 3.3 | U | | 8.44 | | |
| MW-18 | MW-18-12 | 12 ft | 11/28/2012 | < 0.0022 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0015 | J | U | < 0.0056 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0056 | U | |
| | MW-18-18 | 18 ft | 11/28/2012 | < 3 | U | | 4.57 | J | | < 7.5 | U | | < 3 | U | | < 3 | U | | < 7.5 | U | | 290 | | | < 7.5 | U | | 30.7 | | |
| | MW-18-39 | 39 ft | 11/28/2012 | < 0.23 | U | | 0.678 | | | < 0.58 | U | | < 0.23 | U | | < 0.23 | U | | < 0.58 | U | | 9.62 | | | 0.121 | J | | 1.2 | | |
| MW-19 | MW-19-13 | 13 ft | 12/3/2012 | < 5.2 | U | | 14.7 | | | < 13 | U | | < 5.2 | U | | < 5.2 | U | | < 13 | U | | 198 | | | < 13 | U | | 31.6 | | |
| | MW-19-20 | 20 ft | 12/3/2012 | < 0.29 | U | | 0.441 | J | | < 0.74 | U | | < 0.29 | U | | < 0.29 | U | | < 0.74 | U | | 3.5 | | | < 0.74 | U | | 1.54 | | |
| | MW-19-32 | 32 ft | 12/3/2012 | < 0.27 | U | | 0.0998 | J | | < 0.67 | U | | < 0.27 | U | | < 0.27 | U | | < 0.67 | U | | 1.95 | | | < 0.67 | U | | 0.239 | J | |
| MW-20 | MW-20-11 | 11 ft | 12/5/2012 | < 0.23 | U | | < 0.57 | U | | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | 0.0367 | J | | < 0.57 | U | | < 0.57 | U | |
| | MW-20-21 | 21 ft | 12/5/2012 | < 0.25 | U | | 0.0854 | J | | < 0.62 | U | | < 0.25 | U | | < 0.25 | U | | < 0.62 | U | | < 0.25 | U | | < 0.62 | U | | 0.11 | J | |
| | MW-20-41 | 41 ft | 12/5/2012 | < 0.23 | U | | < 0.57 | U | | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | 0.0345 | J | | < 0.57 | U | | 0.0314 | J | |
| MW-21 | MW-21-21 | 21 ft | 12/6/2012 | < 0.23 | U | | < 0.57 | U | | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | | < 0.57 | U | | < 0.57 | U | |
| | MW-21-31 | 31 ft | 12/6/2012 | < 0.23 | U | | < 0.57 | U | | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | | < 0.57 | U | | < 0.57 | U | |
| | MW-21-31-DUP | 31 ft | 12/6/2012 | < 0.81 | U | | 0.731 | J | | < 2 | U | | < 0.81 | U | | < 0.81 | U | | < 2 | U | | < 0.81 | U | | < 2 | U | | 0.718 | J | |
| | MW-21-41 | 41 ft | 12/6/2012 | < 0.0032 | U | | 0.0017 | J | | < 0.0081 | U | | < 0.0032 | U | | < 0.0026 | U | | < 0.0081 | U | | 0.0076 | | | < 0.0081 | U | | 0.0186 | | |
| MW-22 | MW-22-12 | 12 ft | 11/29/2012 | < 0.0026 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0064 | U | | 0.0105 | | | < 0.0064 | U | | < 0.0064 | U | |
| | MW-22-12-DUP | 12 ft | 11/29/2012 | < 0.003 | U | | < 0.0076 | U | | < 0.0076 | U | | < 0.003 | U | | < 0.003 | U | | < 0.0076 | U | | 0.0107 | | | < 0.0076 | U | | < 0.0076 | U | |
| | MW-22-23 | 23 ft | 11/29/2012 | < 4.6 | U | | 7.17 | J | | < 12 | U | | < 4.6 | U | | < 4.6 | U | | < 12 | U | | 354 | | | < 12 | U | | 32.4 | | |
| | MW-22-23-DUP | 23 ft | 11/29/2012 | < 5.1 | U | | 6.55 | J | | < 13 | U | | < 5.1 | U | | < 5.1 | U | | < 13 | U | | 329 | | | < 13 | U | | 28.8 | | |
| | MW-22-39 | 39 ft | 11/29/2012 | < 0.31 | U | | 0.613 | J | | < 0.77 | U | | < 0.31 | U | | < 0.31 | U | | < 0.77 | U | | 0.521 | | | < 0.77 | U | | 0.13 | J | |
| P-55R | P-55R-43 | 43 ft | 1/10/2013 | < 0.37 | U | | 0.679 | J | | < 0.93 | U | | < 0.37 | U | | < 0.37 | U | | < 0.93 | U | | 22.8 | | | < 0.93 | U | | 2.59 | | |
| | P-55R-51 | 51 ft | 1/10/2013 | < 0.0022 | U | | 0.0017 | J | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | 0.0098 | | | < 0.0054 | U | | 0.0043 | J | |
| VMP-47 | VMP-47-12 | 12 ft | 12/10/2012 | < 0.0023 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0023 | U | | < 0.0015 | J | U | < 0.0059 | U | | 0.0066 | | | < 0.0059 | U | | < 0.0059 | U | |
| | VMP-47-19 | 19 ft | 12/10/2012 | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | 0.0066 | | | < 0.0057 | U | | < 0.0057 | U | |
| | VMP-47-29 | 29 ft | 12/10/2012 | < 0.0022 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0014 | J | U | < 0.0056 | U | | 0.0016 | J | | < 0.0056 | U | | < 0.0056 | U | |
| VMP-48 | VMP-48-13 | 13 ft | 12/11/2012 | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | 0.003 | | | < 0.0057 | U | | < 0.0057 | U | |
| | VMP-48-21 | 21 ft | 12/11/2012 | < 0.0023 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0014 | J | U | < 0.0058 | U | | 0.0029 | | | < 0.0058 | U | | < 0.0058 | U | |
| | VMP-48-27 | 27 ft | 12/11/2012 | < 0.0029 | U | | < 0.0071 | U | | < 0.0071 | U | | < 0.0029 | U | | < 0.0017 | J | U | < 0.0071 | U | | 0.0048 | | | < 0.0071 | U | | < 0.0071 | U | |
| VMP-49 | VMP-49-11 | 11 ft | 12/12/2012 | < 0.0027 | U | UJ | < 0.0067 | U | UJ | < 0.0067 | U | UJ | < 0.0027 | U | UJ | < 0.0027 | U | UJ | < 0.0067 | U | UJ | < 0.0027 | U | UJ | < 0.0067 | U | UJ | < 0.0067 | U | UJ |
| | VMP-49-21 | 21 ft | 12/12/2012 | < 0.0038 | U | | < 0.0095 | U | | < 0.0095 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0095 | U | | 0.0062 | | | < 0.0095 | U | | < 0.0095 | U | |
| | VMP-49-31 | 31 ft | 12/12/2012 | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | 0.0065 | | | < 0.0053 | U | | 0.00078 | J | |
| VMP-50 | VMP-50-13 | 13 ft | 12/11/2012 | < 0.0036 | U | | < 0.0091 | U | | < 0.0091 | U | | < 0.0036 | U | | < 0.0036 | U | | < 0.0091 | U | | 0.0054 | | | < 0.0091 | U | | < 0.0091 | U | |
| | VMP-50-21 | 21 ft | 12/11/2012 | < 1.2 | U | | 3.31 | | | < 3 | U | | < 1.2 | U | | < 1.2 | U | | < 3 | U | | 45.8 | | | < 3 | U | | 9.4 | | |
| | VMP-50-21-DUP | 21 ft | 12/11/2012 | < 1.1 | U | | 2.94 | | | < 2.7 | U | | < 1.1 | U | | < 1.1 | U | | < 2.7 | U | | 50.8 | | | < 2.7 | U | | 9.63 | | |
| | VMP-50-29 | 29 ft | 12/11/2012 | < 0.0019 | U | | 0.0043 | J | | < 0.0048 | U | | < 0.0019 | U | | < 0.0019 | U | | < 0.0048 | U | | 0.0427 | | | < 0.0048 | U | | 0.0102 | | |
| VMP-51 | VMP-51-14 | 14 ft | 12/12/2012 | < 0.0023 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0056 | U | | 0.0017 | J | | < 0.0056 | U | | < 0.0056 | U | |
| | VMP-51-21 | 21 ft | 12/12/2012 | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0012 | J | U | < 0.0052 | U | | 0.0021 | | | < 0.0052 | U | | < 0.0052 | U | |
| | VMP-51-31 | 31 ft | 12/12/2012 | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0013 | J | U | < 0.0054 | U | | 0.0022 | | | < 0.0054 | U | | < 0.0054 | U | |
| VMP-52 | VMP-52-13 | 13 ft | 12/13/2012 | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0013 | J | U | < 0.0054 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | |
| | VMP-52-25 | 25 ft | 12/13/2012 | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0016 | J | U | < 0.0055 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | |
| | VMP-52-25-DUP | 25 ft | 12/13/2012 | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0014 | J | U | < 0.0053 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | |
| | VMP-52-29 | 29 ft | 12/13/2012 | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0013 | J | U | < 0.0052 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | |
| VMP-53 | VMP-53-15 | 15 ft | 12/13/2012 | < 0.0021 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0054 | U | | 0.0022 | | | < 0.0054 | U | | < 0.0054 | U | |
| | VMP-53-27 | 27 ft | 12/13/2012 | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | 0.0018 | J | | < 0.0052 | U | | < 0.0052 | U | |
| | VMP-53-31 | 31 ft | 12/13/2012 | < 0.002 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.002 | U | | < 0.002 | U | | < 0.0051 | U | | 0.0019 | J | | < 0.0051 | U | | < 0.0051 | U | |
| VMP-54 | VMP-54-15 | 15 ft | 12/14/2012 | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0015 | J | U | < 0.0057 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | |
| | VMP-54-15-DUP | 15 ft | 12/14/2012 | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | |
| | VMP-54-25 | 25 ft | 12/14/2012 | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0014 | J | U | < 0.0053 | U | | 0.0013 | J | | < 0.0053 | U | | < 0.0053 | U | |
| | VMP-54-31 | 31 ft | 12/14/2012 | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0014 | J | U | < 0.0053 | U | | 0.0015 | J | | < 0.0053 | U | | < 0.0053 | U | |
| VMP-55 | VMP-55-13 | 13 ft | 12/17/2012 | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | |
| | VMP-55-25 | 25 ft | 12/17/2012 | < 0.0021 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0051 | U | |
| | VMP-55-31 | 31 ft | 12/17/2012 | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | |
| | VMP-55-31-DUP | 31 ft | 12/17/2012 | < 0.0021 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0051 | U | | 0.0011 | J | | < 0.0051 | U | | 0.0011 | J | |

SEE LAST PAGE OF TABLE FOR NOTES

# Table 3
## Summary of Soil Analytical Data

| Location | Sample ID | Depth | Sample Date | m,p-Xylene | | | Methyl tert-Butyl Ether (MTBE) | | | Naphthalene | | | n-Butylbenzene | | | n-Propylbenzene | | | o-Xylenes | | | sec-Butylbenzene | | | Styrene | | | tert-Butylbenzene | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| MW-16 | MW-16-14 | 14 ft | 12/4/2012 | < 0.23 | U | | < 0.23 | U | | 0.201 | J | | 0.0323 | J | | < 0.56 | U | | 0.04 | J | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | |
| | MW-16-27 | 27 ft | 12/4/2012 | < 0.22 | U | | < 0.22 | U | | < 0.56 | U | | 0.0233 | J | | < 0.56 | U | | 0.0281 | J | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | |
| | MW-16-37 | 37 ft | 12/4/2012 | < 0.11 | U | | < 0.11 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | 0.0157 | J | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | |
| MW-17 | MW-17-14 | 14 ft | 11/26/2012 | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | |
| | MW-17-21 | 21 ft | 11/26/2012 | < 0.0021 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | |
| | MW-17-35 | 35 ft | 11/26/2012 | 27.6 | | | < 1.3 | U | | 5.3 | | | 9.56 | | | 29.1 | | | 4.67 | | | 1.97 | J | | < 3.3 | U | | < 3.3 | U | |
| MW-18 | MW-18-12 | 12 ft | 11/28/2012 | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | |
| | MW-18-18 | 18 ft | 11/28/2012 | 690 | | | < 3 | U | | 60.3 | | | 33.3 | | | 91.4 | | | 282 | | | 7.92 | | | < 7.5 | U | | < 7.5 | U | |
| | MW-18-39 | 39 ft | 11/28/2012 | 26.6 | | | < 0.23 | U | | 3.97 | | | 0.977 | | | 3.32 | | | 12.7 | | | 0.328 | J | | < 0.58 | U | | < 0.58 | U | |
| MW-19 | MW-19-13 | 13 ft | 12/3/2012 | 441 | | | < 5.2 | U | | 34.8 | | | 27.3 | | | 58.2 | | | 172 | | | 15.7 | | | < 13 | U | | < 13 | U | |
| | MW-19-20 | 20 ft | 12/3/2012 | 3.11 | | | < 0.29 | U | | 4.44 | | | 0.459 | J | | 1.67 | | | 0.234 | J | | 0.458 | J | | < 0.74 | U | | < 0.74 | U | |
| | MW-19-32 | 32 ft | 12/3/2012 | 3.36 | | | < 0.27 | U | | 0.694 | | | 0.29 | J | | 0.6 | J | | 1.34 | | | 0.116 | J | | < 0.67 | U | | < 0.67 | U | |
| MW-20 | MW-20-11 | 11 ft | 12/5/2012 | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | | < 0.23 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | |
| | MW-20-21 | 21 ft | 12/5/2012 | < 0.25 | U | | < 0.25 | U | | < 0.62 | U | | < 0.62 | U | | 0.178 | J | | < 0.25 | U | | 0.365 | J | | < 0.62 | U | | < 0.62 | U | |
| | MW-20-41 | 41 ft | 12/5/2012 | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | | 0.0398 | J | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | |
| MW-21 | MW-21-21 | 21 ft | 12/6/2012 | < 0.23 | U | | < 0.23 | U | | 0.289 | J | | 0.0915 | J | | < 0.57 | U | | < 0.23 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | |
| | MW-21-31 | 31 ft | 12/6/2012 | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | 0.116 | J | | < 0.57 | U | | < 0.23 | U | | 0.06 | J | | < 0.57 | U | | < 0.57 | U | |
| | MW-21-31-DUP | 31 ft | 12/6/2012 | < 0.81 | U | | < 0.81 | U | | 1.25 | J | | 2.12 | | | 1.34 | J | | < 0.81 | U | | 1.27 | J | | < 2 | U | | < 2 | U | |
| | MW-21-41 | 41 ft | 12/6/2012 | 0.0065 | | | < 0.0032 | U | | 0.0076 | J | | 0.0041 | J | | 0.0239 | | | < 0.0032 | U | | 0.0058 | J | | < 0.0081 | U | | < 0.0081 | U | |
| MW-22 | MW-22-12 | 12 ft | 11/29/2012 | 0.0017 | J | | < 0.0026 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | 0.00069 | J | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | |
| | MW-22-12-DUP | 12 ft | 11/29/2012 | 0.0018 | J | | < 0.003 | U | | < 0.0076 | U | | < 0.0076 | U | | < 0.0076 | U | | 0.00078 | J | | < 0.0076 | U | | < 0.0076 | U | | < 0.0076 | U | |
| | MW-22-23 | 23 ft | 11/29/2012 | 787 | | | < 4.6 | U | | 43.2 | | | 40.6 | | | 98.7 | | | 361 | | | 12.4 | | | < 12 | U | | 11.8 | J | |
| | MW-22-23-DUP | 23 ft | 11/29/2012 | 742 | | | < 5.1 | U | | 39.8 | | | 37.7 | | | 88.7 | | | 339 | | | 10.9 | J | | < 13 | U | | 10 | J | |
| | MW-22-39 | 39 ft | 11/29/2012 | 1.4 | | | < 0.31 | U | | < 0.77 | U | | 1.32 | | | 0.309 | J | | 0.941 | | | 0.166 | J | | < 0.77 | U | | 0.558 | J | |
| P-55R | P-55R-43 | 43 ft | 1/10/2013 | 58.5 | | | < 0.37 | U | | 11.3 | | | 2.65 | | | 5.7 | | | 24.8 | | | 0.996 | | | < 0.93 | U | | < 0.93 | U | |
| | P-55R-51 | 51 ft | 1/10/2013 | 0.0154 | | | < 0.0022 | U | | 0.0125 | | | 0.0087 | | | 0.0119 | | | 0.0082 | | | 0.004 | J | | < 0.0054 | U | | < 0.0054 | U | |
| VMP-47 | VMP-47-12 | 12 ft | 12/10/2012 | 0.0013 | J | | < 0.0023 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | | 0.00055 | J | | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | |
| | VMP-47-19 | 19 ft | 12/10/2012 | 0.0013 | J | | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | 0.00053 | J | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | |
| | VMP-47-29 | 29 ft | 12/10/2012 | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | |
| VMP-48 | VMP-48-13 | 13 ft | 12/11/2012 | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | 0.00036 | J | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | |
| | VMP-48-21 | 21 ft | 12/11/2012 | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | 0.00043 | J | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | |
| | VMP-48-27 | 27 ft | 12/11/2012 | 0.0013 | J | | < 0.0029 | U | | < 0.0071 | U | | < 0.0071 | U | | < 0.0071 | U | | 0.00054 | J | | < 0.0071 | U | | < 0.0071 | U | | < 0.0071 | U | |
| VMP-49 | VMP-49-11 | 11 ft | 12/12/2012 | 0.0023 | J | J | < 0.0027 | U | UJ | 0.0165 | | J | < 0.0067 | U | UJ | < 0.0067 | U | UJ | < 0.0027 | U | UJ | < 0.0067 | U | UJ | < 0.0067 | U | UJ | < 0.0067 | U | UJ |
| | VMP-49-21 | 21 ft | 12/12/2012 | 0.0015 | J | | < 0.0038 | U | | < 0.0095 | U | | < 0.0095 | U | | < 0.0095 | U | | 0.00059 | J | | < 0.0095 | U | | < 0.0095 | U | | < 0.0095 | U | |
| | VMP-49-31 | 31 ft | 12/12/2012 | 0.0017 | J | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | 0.00072 | J | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | |
| VMP-50 | VMP-50-13 | 13 ft | 12/11/2012 | 0.0015 | J | | < 0.0036 | U | | < 0.0091 | U | | < 0.0091 | U | | < 0.0091 | U | | 0.00054 | J | | < 0.0091 | U | | < 0.0091 | U | | < 0.0091 | U | |
| | VMP-50-21 | 21 ft | 12/11/2012 | 117 | | | < 1.2 | U | | 15.4 | | J | 15.6 | | | 32 | | | 46.6 | | | 3.99 | | | < 3 | U | | 2.43 | J | |
| | VMP-50-21-DUP | 21 ft | 12/11/2012 | 127 | | | < 1.1 | U | | 15 | | J | 14 | | | 31 | | | 49.2 | | | 3.69 | | | < 2.7 | U | | 2.19 | J | |
| | VMP-50-29 | 29 ft | 12/11/2012 | 0.111 | | | < 0.0019 | U | | 0.0501 | | | 0.0206 | | | 0.0396 | | | 0.0808 | | | 0.0071 | | | < 0.0048 | U | | 0.0032 | J | |
| VMP-51 | VMP-51-14 | 14 ft | 12/12/2012 | < 0.0023 | U | | < 0.0023 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0023 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | |
| | VMP-51-21 | 21 ft | 12/12/2012 | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | 0.00036 | J | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | |
| | VMP-51-31 | 31 ft | 12/12/2012 | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | 0.00032 | J | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| VMP-52 | VMP-52-13 | 13 ft | 12/13/2012 | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| | VMP-52-25 | 25 ft | 12/13/2012 | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | |
| | VMP-52-25-DUP | 25 ft | 12/13/2012 | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | |
| | VMP-52-29 | 29 ft | 12/13/2012 | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | |
| VMP-53 | VMP-53-15 | 15 ft | 12/13/2012 | < 0.0021 | U | | < 0.0021 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0021 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| | VMP-53-27 | 27 ft | 12/13/2012 | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | |
| | VMP-53-31 | 31 ft | 12/13/2012 | < 0.002 | U | | < 0.002 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.002 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | |
| VMP-54 | VMP-54-15 | 15 ft | 12/14/2012 | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | |
| | VMP-54-15-DUP | 15 ft | 12/14/2012 | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | |
| | VMP-54-25 | 25 ft | 12/14/2012 | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | |
| | VMP-54-31 | 31 ft | 12/14/2012 | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | 0.00029 | J | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | |
| VMP-55 | VMP-55-13 | 13 ft | 12/17/2012 | < 0.0021 | U | | 0.0272 | | J | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | |
| | VMP-55-25 | 25 ft | 12/17/2012 | < 0.0021 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | |
| | VMP-55-31 | 31 ft | 12/17/2012 | < 0.0021 | U | | < 0.0021 | U | UJ | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | |
| | VMP-55-31-DUP | 31 ft | 12/17/2012 | 0.0013 | J | | 0.011 | | J | < 0.0051 | U | | 0.0013 | J | | 0.0011 | J | | 0.00072 | J | | 0.0012 | J | | < 0.0051 | U | | < 0.0051 | U | |

# Table 3
## Summary of Soil Analytical Data

| Location | Sample ID | Depth | Sample Date | Tetrachloroethene | | | Toluene | | | trans-1,2-Dichloroethene | | | trans-1,3-Dichloropropene | | | Trichloroethene | | | Trichlorofluoromethane | | | Vinyl acetate | | | Vinyl chloride | | | Xylenes (total) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| MW-16 | MW-16-14 | 14 ft | 12/4/2012 | < 0.23 | U | | < 0.56 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.56 | U | UJ | < 0.23 | U | | 0.128 | J | |
| | MW-16-27 | 27 ft | 12/4/2012 | < 0.22 | U | | < 0.56 | U | | < 0.22 | U | | < 0.22 | U | | < 0.22 | U | | < 0.22 | U | | < 0.56 | U | UJ | < 0.22 | U | | 0.0852 | J | |
| | MW-16-37 | 37 ft | 12/4/2012 | < 0.11 | U | | < 0.27 | U | | < 0.11 | U | | < 0.11 | U | | < 0.11 | U | | < 0.11 | U | | < 0.27 | U | UJ | < 0.11 | U | | 0.0454 | J | |
| MW-17 | MW-17-14 | 14 ft | 11/26/2012 | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | UJ | < 0.0021 | U | | < 0.0021 | U | |
| | MW-17-21 | 21 ft | 11/26/2012 | < 0.0021 | U | | < 0.0051 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0051 | U | UJ | < 0.0021 | U | | < 0.0021 | U | |
| | MW-17-35 | 35 ft | 11/26/2012 | < 1.3 | U | | 0.833 | J | | < 1.3 | U | | < 1.3 | U | | < 1.3 | U | | < 1.3 | U | | < 3.3 | U | UJ | < 1.3 | U | | 32.3 | | |
| MW-18 | MW-18-12 | 12 ft | 11/28/2012 | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | UJ | < 0.0022 | U | | < 0.0022 | U | |
| | MW-18-18 | 18 ft | 11/28/2012 | < 3 | U | | 283 | | | < 3 | U | | < 3 | U | | < 3 | U | | < 3 | U | | < 7.5 | U | UJ | < 3 | U | | 972 | | |
| | MW-18-39 | 39 ft | 11/28/2012 | < 0.23 | U | | 4.1 | | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.58 | U | UJ | < 0.23 | U | | 39.3 | | |
| MW-19 | MW-19-13 | 13 ft | 12/3/2012 | < 5.2 | U | | 656 | | | < 5.2 | U | | < 5.2 | U | | < 5.2 | U | | < 5.2 | U | | < 13 | U | UJ | < 5.2 | U | | 613 | | |
| | MW-19-20 | 20 ft | 12/3/2012 | < 0.29 | U | | 0.501 | J | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.74 | U | UJ | < 0.29 | U | | 3.34 | | |
| | MW-19-32 | 32 ft | 12/3/2012 | < 0.27 | U | | 0.506 | J | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.67 | U | UJ | < 0.27 | U | | 4.7 | | |
| MW-20 | MW-20-11 | 11 ft | 12/5/2012 | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | | 0.0803 | J | |
| | MW-20-21 | 21 ft | 12/5/2012 | < 0.25 | U | | < 0.62 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.62 | U | | < 0.25 | U | | < 0.25 | U | |
| | MW-20-41 | 41 ft | 12/5/2012 | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | | 0.0398 | J | |
| MW-21 | MW-21-21 | 21 ft | 12/6/2012 | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | |
| | MW-21-31 | 31 ft | 12/6/2012 | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.23 | U | | < 0.57 | U | | < 0.23 | U | | < 0.23 | U | |
| | MW-21-31-DUP | 31 ft | 12/6/2012 | < 0.81 | U | | < 2 | U | | < 0.81 | U | | < 0.81 | U | | < 0.81 | U | | < 0.81 | U | | < 2 | U | | < 0.81 | U | | < 0.81 | U | |
| | MW-21-41 | 41 ft | 12/6/2012 | < 0.0032 | U | | 0.006 | J | | < 0.0032 | U | | < 0.0032 | U | | < 0.0032 | U | | < 0.0032 | U | | < 0.0081 | U | | < 0.0032 | U | | 0.0065 | | |
| MW-22 | MW-22-12 | 12 ft | 11/29/2012 | < 0.0026 | U | | 0.0096 | | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0064 | U | UJ | < 0.0026 | U | | 0.0024 | J | |
| | MW-22-12-DUP | 12 ft | 11/29/2012 | < 0.003 | U | | 0.0099 | | | < 0.003 | U | | < 0.003 | U | | < 0.003 | U | | < 0.003 | U | | < 0.0076 | U | UJ | < 0.003 | U | | 0.0026 | J | |
| | MW-22-23 | 23 ft | 11/29/2012 | < 4.6 | U | | 358 | | | < 4.6 | U | | < 4.6 | U | | < 4.6 | U | | < 4.6 | U | | < 12 | U | | < 4.6 | U | | 1150 | | |
| | MW-22-23-DUP | 23 ft | 11/29/2012 | < 5.1 | U | | 318 | | | < 5.1 | U | | < 5.1 | U | | < 5.1 | U | | < 5.1 | U | | < 13 | U | | < 5.1 | U | | 1080 | | |
| | MW-22-39 | 39 ft | 11/29/2012 | < 0.31 | U | | < 0.77 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | < 0.77 | U | | < 0.31 | U | | 2.34 | | |
| P-55R | P-55R-43 | 43 ft | 1/10/2013 | < 0.37 | U | | 10.8 | | | < 0.37 | U | | < 0.37 | U | | < 0.37 | U | | < 0.37 | U | | < 0.93 | U | | < 0.37 | U | | 83.3 | | |
| | P-55R-51 | 51 ft | 1/10/2013 | < 0.0022 | U | | 0.0055 | | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | 0.0245 | | | < 0.0022 | U | | 0.0236 | | |
| VMP-47 | VMP-47-12 | 12 ft | 12/10/2012 | < 0.0023 | U | | 0.0064 | | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0059 | U | | < 0.0023 | U | | 0.0018 | J | |
| | VMP-47-19 | 19 ft | 12/10/2012 | < 0.0023 | U | | 0.0064 | | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | 0.0018 | J | |
| | VMP-47-29 | 29 ft | 12/10/2012 | < 0.0022 | U | | 0.0022 | J | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | 0.00063 | J | |
| VMP-48 | VMP-48-13 | 13 ft | 12/11/2012 | < 0.0023 | U | | 0.0034 | J | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | 0.001 | J | |
| | VMP-48-21 | 21 ft | 12/11/2012 | < 0.0023 | U | | 0.0034 | J | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | 0.0013 | J | |
| | VMP-48-27 | 27 ft | 12/11/2012 | < 0.0029 | U | | 0.0051 | J | | < 0.0029 | U | | < 0.0029 | U | | < 0.0029 | U | | < 0.0029 | U | | < 0.0071 | U | | < 0.0029 | U | | 0.0018 | J | |
| VMP-49 | VMP-49-11 | 11 ft | 12/12/2012 | < 0.0027 | U | UJ | 0.0013 | J | J | < 0.0027 | U | UJ | < 0.0027 | U | UJ | < 0.0027 | U | UJ | < 0.0027 | U | UJ | < 0.0067 | U | UJ | < 0.0027 | U | UJ | 0.0023 | J | J |
| | VMP-49-21 | 21 ft | 12/12/2012 | < 0.0038 | U | | 0.0059 | J | | < 0.0038 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0095 | U | | < 0.0038 | U | | 0.0021 | J | |
| | VMP-49-31 | 31 ft | 12/12/2012 | < 0.0021 | U | | 0.0053 | | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | 0.0024 | | |
| VMP-50 | VMP-50-13 | 13 ft | 12/11/2012 | < 0.0036 | U | | 0.0056 | J | | < 0.0036 | U | | < 0.0036 | U | | < 0.0036 | U | | < 0.0036 | U | | < 0.0091 | U | | 0.0017 | J | | 0.002 | J | |
| | VMP-50-21 | 21 ft | 12/11/2012 | < 1.2 | U | | 0.937 | J | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 3 | U | UJ | < 1.2 | U | | 164 | | |
| | VMP-50-21-DUP | 21 ft | 12/11/2012 | < 1.1 | U | | 1.29 | J | | < 1.1 | U | | < 1.1 | U | | < 1.1 | U | | < 1.1 | U | | < 2.7 | U | UJ | < 1.1 | U | | 177 | | |
| | VMP-50-29 | 29 ft | 12/11/2012 | < 0.0019 | U | | 0.033 | | | < 0.0019 | U | | < 0.0019 | U | | < 0.0019 | U | | < 0.0019 | U | | < 0.0048 | U | | 0.00074 | J | | 0.192 | | |
| VMP-51 | VMP-51-14 | 14 ft | 12/12/2012 | < 0.0023 | U | | 0.0021 | J | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0056 | U | | < 0.0023 | U | | < 0.0023 | U | |
| | VMP-51-21 | 21 ft | 12/12/2012 | < 0.0021 | U | | 0.0026 | J | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | 0.0011 | J | |
| | VMP-51-31 | 31 ft | 12/12/2012 | < 0.0022 | U | | 0.0028 | J | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | 0.0011 | J | |
| VMP-52 | VMP-52-13 | 13 ft | 12/13/2012 | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | VMP-52-25 | 25 ft | 12/13/2012 | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | VMP-52-25-DUP | 25 ft | 12/13/2012 | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | |
| | VMP-52-29 | 29 ft | 12/13/2012 | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | |
| VMP-53 | VMP-53-15 | 15 ft | 12/13/2012 | < 0.0021 | U | | 0.0033 | J | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0054 | U | | < 0.0021 | U | | 0.00063 | J | |
| | VMP-53-27 | 27 ft | 12/13/2012 | < 0.0021 | U | | 0.002 | J | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | 0.00046 | J | |
| | VMP-53-31 | 31 ft | 12/13/2012 | < 0.002 | U | | 0.0027 | J | | < 0.002 | U | | < 0.002 | U | | < 0.002 | U | | < 0.002 | U | | < 0.0051 | U | | < 0.002 | U | | 0.00071 | J | |
| VMP-54 | VMP-54-15 | 15 ft | 12/14/2012 | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | |
| | VMP-54-15-DUP | 15 ft | 12/14/2012 | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | VMP-54-25 | 25 ft | 12/14/2012 | < 0.0021 | U | | 0.0021 | J | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | 0.00055 | J | |
| | VMP-54-31 | 31 ft | 12/14/2012 | < 0.0021 | U | | 0.0021 | J | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | 0.00083 | J | |
| VMP-55 | VMP-55-13 | 13 ft | 12/17/2012 | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | |
| | VMP-55-25 | 25 ft | 12/17/2012 | < 0.0021 | U | | < 0.0051 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0021 | U | | < 0.0021 | U | |
| | VMP-55-31 | 31 ft | 12/17/2012 | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | |
| | VMP-55-31-DUP | 31 ft | 12/17/2012 | < 0.0021 | U | | 0.0011 | J | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0051 | U | | < 0.0021 | U | | 0.002 | J | |

Notes:

**Lab Qualifiers**

J = Estimated value; results between the MDL and RL

U = Compound analyzed for but not detected above the RL

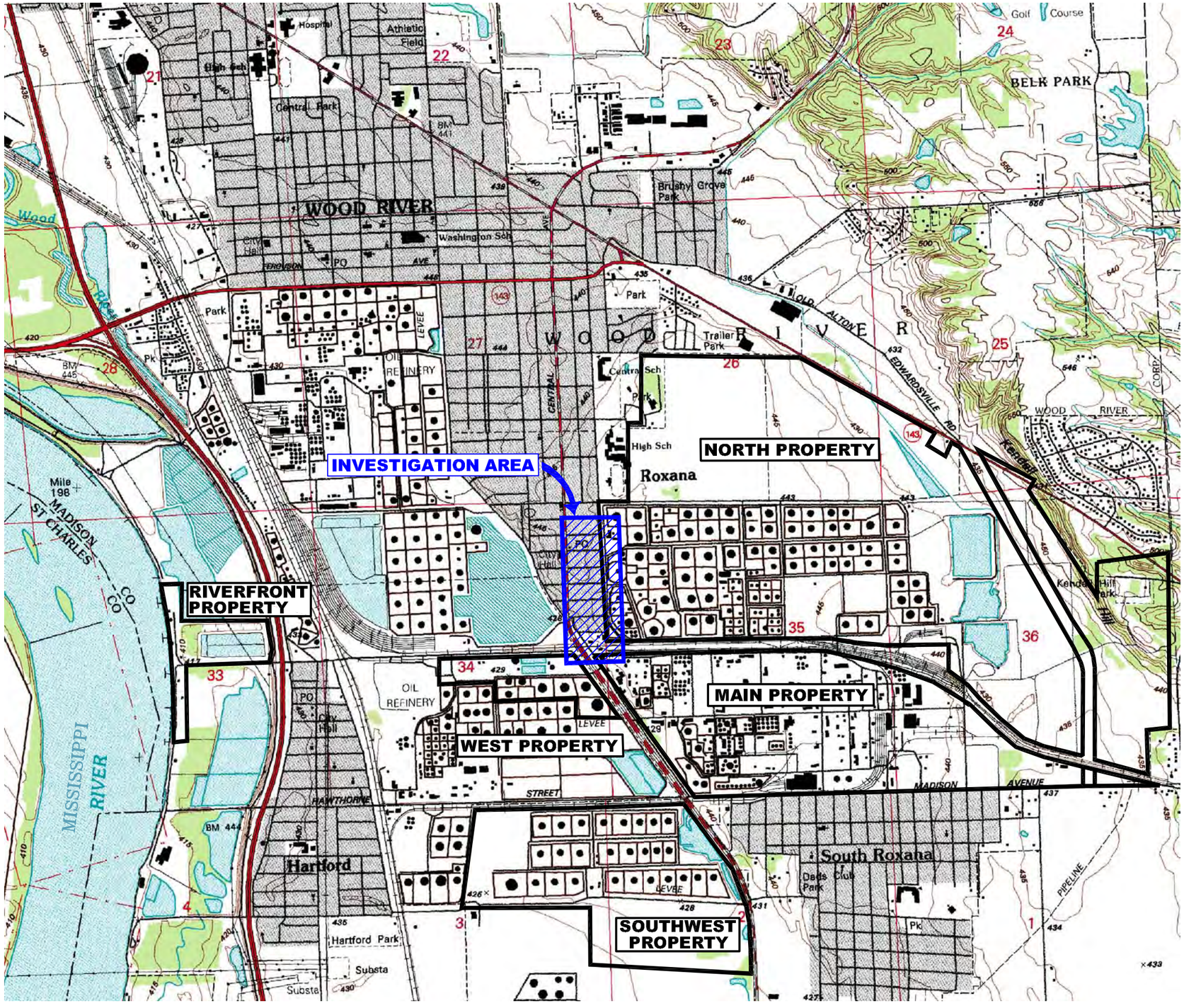
**URS Qualifiers**

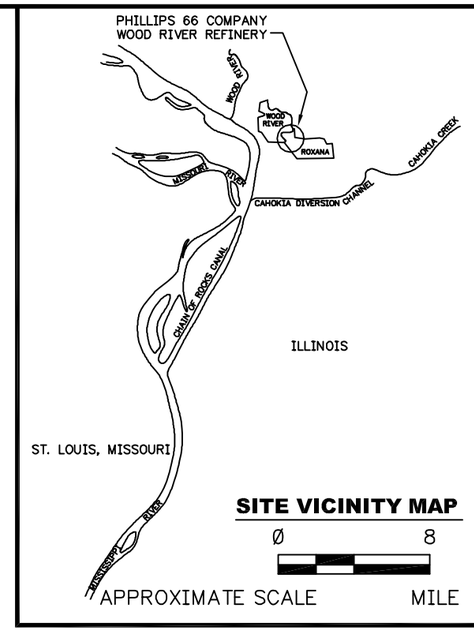
R = Indicates analyte result was rejected

J = Estimated detection

UJ = Estimated non-detect

U = Non-detect, e.g. blank contamination




LEGEND

- WOOD RIVER REFINERY PROPERTY BOUNDARY
- INVESTIGATION AREA

SOURCE: ELECTRONIC USGS DIGITAL RASTER GRAPHIC 7.5 MINUTE TOPOGRAPHIC MAP OF WOOD RIVER, IL–MO REVISED 1994.

CONTOUR INTERVAL = 5 FT

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APPROXIMATE SCALE MILE

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| | |
|---|---|
| SHELL OIL PRODUCTS US<br>ROXANA, ILLINOIS | PROJECT NO.<br>21562850 |
| URS | |
| DRN. BY: djd March 2013<br>DSGN. BY: mpm<br>CHKD. BY: kh | Investigation Area Location Map |
| | FIG. NO.<br>1 |

File: P:\ENVIRONMENTAL\SHELL OIL PRODUCT US\SHELL OIL PRODUCTS US 2013\21562850 – ROXANA\21562850-IJ_ROXANA DRILLING\WW AND VMP INSTALLATION REPORT\FIGURES\FIG 1 INVESTIGATION AREA LOCATION MAP.DWG Last edited: 03/11/13 ● 10:43 a.m. ● WCC-ST.LOUIS

File: P:\ENVIRONMENTAL\SHELL OIL PRODUCT US\SHELL OIL PRODUCTS US 2013\21562850 – ROXANA\21562850-1J_ROXANA DRILLING\MW AND VMP INSTALLATION REPORT\GMW AND VMP INSTALLATION 4Q12 REPORT\FIGURES\FIG 2 MONITORING WELL AND VMP LOCATIONS MAP.DWG Last edited: MAR. 27, 13 @ 2:46 p.m. by: david_deguire

LEGEND

- NEW MONITORING WELL LOCATION
- NEW SOIL VAPOR MONITORING POINT LOCATION
- MONITORING WELL LOCATION
- PIEZOMETER LOCATION
- SOIL VAPOR MONITORING POINT LOCATION

NOTE:
ROST-4-PZ(F) IS ALREADY A 2-INCH DIAMETER WELL (CONDITION 2.a.i. IN IEPA'S MARCH 14, 2012 LETTER RESPONDING TO SHELL'S 9/1/11 RESPONSE LETTER.

TYDEMAN AVE
FIRST ST
SECOND ST
THIRD ST
FOURTH ST
FIFTH ST
SIXTH ST
SEVENTH ST
EIGHTH ST
CHAFFEE ST
(S. CENTRAL AVE) HIGHWAY 111
RAND AVENUE
VILLAGE OF ROXANA
VILLAGE OF HARTFORD
BP
NORTH PROPERTY
WEST PROPERTY
MAIN PROPERTY
WOOD RIVER REFINERY
ROXANA DEPARTMENT OF PUBLIC WORKS
A-27
A-28
A-33
PZ-1(101)
PZ-1(85)
MW-9
VMP-47
MW-10
VMP-1
VMP-48
P-55
VMP-2
VMP-33
VMP-20
ROST-4-PZ
ROST-4-PZ-(A)
ROST-4-PZ-(B)
ROST-4-PZ-(C)
P-60-11
ROST-3-MW
VMP-42
VMP-46
VMP-34
P-60
P-60-S
P-60-12
P-60-12S
ROST-4-PZ-(D)
ROST-4-PZ-(E)
ROST-4-PZ-(F)
ROST-4-PZ-(G)
VMP-3
P-68
P-60-13
P-60-13S
MW-11
VMP-21
ROST-5-PZ
VMP-49
VMP-35
VMP-31
MW-17
T-12
VMP-32
VMP-43
FOURTH ST
ROST-7-PZ
MW-22
VMP-26
P-69
VMP-27
VMP-22
VMP-50
MW-18
VMP-28
VMP-4
VMP-36
P-74
MW-19
ROST-21-PZ
P-59
FIFTH ST
MW-16
VMP-44
GP-9-PZ
ROST-10-PZ
PZ-2(84)
VMP-23
VMP-51
VMP-37
MW-12
PZ-2(70.5)
VMP-5
MW-20
P-56
VMP-45
VMP-38
MW-2
MW-1
VMP-52
VMP-6
SEVENTH ST
VMP-7
VMP-24
VMP-39
T-6
MW-3
VMP-8
MW-21
P-57
VMP-54
MW-4
VMP-53
VMP-40
VMP-9
P-93A
P-93B
P-93C
P-93D
VMP-18
VMP-19
EIGHTH ST
MW-5
VMP-41
VMP-10
MW-7
VMP-11
VMP-17
VMP-12
VMP-29
MW-8
VMP-55
VMP-30
VMP-13
P-58
VMP-14
VMP-25
VMP-15
VMP-16
P-66
P-75
MW-6A
MW-6B
MW-6C
MW-6D
MW-13
MW-14
P-117
P-114
P-116
P-115
P-119
T-62
T-63
P-120
T-7
P-67
T-2
P-62
P-70
P-61
P-71
S-1
P-72
P-73
T-24

0 300
SCALE FEET
N

| | | |
|---|---|---|
| SHELL OIL PRODUCTS US<br>ROXANA, ILLINOIS | PROJECT NO.<br>21562850 | |
| URS | | |
| DRN. BY:wmp March 2013<br>DSGN. BY:mpm<br>CHKD. BY:kh | Monitoring Well and VMP Location Map | FIG. NO.<br>2 |

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

## MW-16



Starting Date: 12/4/12
Completion Date: 12/5/12
Casing Elevation: 443.39
Ground Elevation: 443.76

Quadrangle
Sec:34 (E - center of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792976.80
E: (Y):2322031.87

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ASPHALT | Asphalt cover | Air knifed to 10' bgs to clear utilities. |
| | | | | | | | | Stiff, moist, brown, Silty CLAY (CL) | |
| 5 | | | | | | | CL | | |
| | | | | | | | ML | Dense, moist, brown, Clayey SILT (ML)<br>Becomes wet | |
| | | | | | | | SM | Dense, moist, brown, fine grained, Silty SAND (SM) | |
| 10 | | 36 | 36 | 0.2<br>0.2 | | | | Loose to medium dense, moist to dry, brown, fine to medium grained SAND (SP) | |
| 15 | | 60 | 45 | 0.3<br>0.2 | | | SP | | Sample MW-16-14 for VOC at 1440 |
| 20 | | 60 | 47 | 0.3<br>0.2<br>0.1 | | | | | |
| | | | | 0.2 | | | | | |

Completion Depth: **49.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **R. Hart, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 41.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

## MW-16



Starting Date: 12/4/12
Completion Date: 12/5/12
Casing Elevation: 443.39
Ground Elevation: 443.76

Quadrangle
Sec:34 (E - center of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792976.80
E: (Y):2322031.87

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | 60 | 45 | 0.1 | | | | Same: Loose to medium dense, moist to dry, brown, fine to medium grained SAND (SP) | |
| | | | | | | | | Trace black banding (1 ft) | Sample MW-16-27 for VOC at 1450 |
| | | | | 0.2 | | | | Becomes moist, medium to coarse grained | |
| 30 | | 60 | 52 | 0.1 | | | | | |
| | | | | 0.1 | | | | | |
| | | 60 | 47 | 0.2 | | | | | |
| 35 | | | | 0.2 | | | SP | Trace black banding (6") | Sample MW-16-37 for VOC at 1455 |
| | | 60 | 48 | 0.2 | | | | | |
| 40 | | | | 0.2 | | | | | |
| | | | | 6.9 | | | | Becomes wet, trace black banding (4") ▽ | |
| | | 60 | 50 | 3.4 | | | | Becomes dark brown | |
| 45 | | | | 1.5 | | | | | |
| | | | | | | | | | Geoprobe sampling ended at 48 ft bgs due to sand blow-in issues. Soil to 49 ft logged via auger cuttings. |
| | | | | | | | | Bottom of boring at 49 ft bgs | |

Completion Depth: **49.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **R. Hart, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 41.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

- Geoprobe
- Air Knife/Hand Auger Sampler
- Air Rotary
- Sonic
- Splitspoon Sampler
- Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**MW-17**



Starting Date: 11/26/12
Completion Date: 11/26/12
Casing Elevation: 441.57
Ground Elevation: 441.83

Quadrangle
Sec:34 (NE 1/4 of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793347.04
E: (Y):2322247.29

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ASPHALT | Asphalt cover | Air knifed to 10' bgs to clear utilities. |
| | | | | 0.2 | | | | Sandy FILL, trace clay and gravel (FILL) | |
| | | | | 0.0 | | | FILL | | |
| | | | | 0.0 | | | | | |
| | | | | 0.0 | | | | Loose, moist, brown, fine grained clayey SAND (SC) | |
| 5 | | | | 0.0 | | | SC | | |
| | | | | 0.0 | | | | Clay grades out | |
| | | | | 0.0 | | | | Loose, moist, brown, fine grained SAND (SP) | |
| | | | | 0.0 | | | | | |
| | | | | 0.0 | | | | | |
| 10 | | 36 | 32 | 0.5 | | | | Becomes fine to medium grained | |
| | | | | 0.6 | | | | | |
| | | 60 | 32 | 0.6 | | | SP | | Sample MW-17-14 for VOC at 1120 |
| 15 | | | | 0.6 | | | | 3" seam gray, with silt | |
| | | 60 | 32 | 1.4 | | | | | |
| 20 | | | | 4.1 | | | | | Sample MW-17-21 for VOC at 1100 |
| | | | | 3.6 | | | | Becomes medium dense, fine grained | |
| | | | | 3.1 | | | | | |

Completion Depth: **50.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **M. Miller, W. Pennigton**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 35 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**MW-17**



Starting Date: 11/26/12
Completion Date: 11/26/12
Casing Elevation: 441.57
Ground Elevation: 441.83

Quadrangle
Sec:34 (NE 1/4 of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793347.04
E: (Y):2322247.29

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | 60 | 41 | 1.6 | | | | Same: Medium dense, moist, brown, fine grained SAND (SP) | |
| | | | | | | | | Becomes loose, fine to medium grained | |
| 30 | | 60 | 48 | 1.8<br>2.0 | | | | Becomes medium dense | |
| | | 60 | 60 | 6.0<br>56.4<br>153.4 | | | SP | Becomes wet, gray, fine grained, trace silt ▽ | Sample MW-17-35 for VOC at 1110 |
| 40 | | 60 | 60 | 703.1<br>421.8 | | | | Becomes brown, coarse grained, silt grades out | |
| 45 | | | | | | | | Bottom of boring at 50 ft bgs | Geoprobe sampling ended at 43 ft bgs due to sand blow-in issues. Soil to 50 ft logged via auger cuttings |

Completion Depth: **50.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **M. Miller, W. Pennigton**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 35 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**MW-18**



Starting Date: 11/28/12
Completion Date: 11/29/12
Casing Elevation: 442.04
Ground Elevation: 442.37

Quadrangle
Sec:34 (NE 1/4 of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793161.68
E: (Y):2322252.27

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ASPHALT | Asphalt cover | Air knifed to 11' bgs to clear utilities. |
| | | | | 1.7 | | | FILL | Dense, dry, dark brown, Sandy FILL, with clay and gravel (FILL) | |
| | | | | 0.0 | | | CL | Medium stiff, moist, brown Sandy CLAY (CL) | |
| | | | | 0.0 | | | | Loose, moist, brown, fine grained SAND (SP) | |
| | | | | 0.0 | | | | | |
| 5 | | | | 0.0 | | | | | |
| | | | | 0.0 | | | | | |
| | | | | 0.0 | | | | | |
| | | | | 0.0 | | | | | |
| | | | | 0.0 | | | | | |
| 10 | | | | | | | SP | | |
| | | 24 | 19 | 0.0 | | | | | Sample MW-18-12 for VOC at 1325 |
| | | | | 0.0 | | | | | |
| | | 60 | 40 | 0.0 | | | | | |
| 15 | | | | 0.7 | | | | | |
| | | | | | | | | Becomes wet, gray | Sample MW-18-18 for VOC at 1340 |
| | | | | 748.9 | | | | | |
| 20 | | | | | | | CL | Medium stiff, moist, gray, low plastic, Silty CLAY (CL) | |
| | | 60 | 45 | 39.1 | | | | Medium dense, moist, brown, medium to coarse grained sand (SP) | |
| | | | | 5.6 | | | SP | | |
| | | | | 13.7 | | | | | |

Completion Depth: **52.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **M. Miller, W. Pennigton**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 40 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**MW-18**



Starting Date: 11/28/12
Completion Date: 11/29/12
Casing Elevation: 442.04
Ground Elevation: 442.37

Quadrangle
Sec:34 (NE 1/4 of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793161.68
E: (Y):2322252.27

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | 60 | 48 | 10.2 | | | | Same: Medium dense, moist, brown, medium to coarse grained sand (SP) | |
| | | | | 13.3 | | | | | |
| 30 | | 60 | 42 | 14.3 | | | | | |
| | | | | 13.3 | | | | | |
| | | 60 | 46 | 12.8 | | | | | |
| 35 | | | | 14.8 | | | SP | | |
| | | | | 86.8 | | | | | Sample MW-18-39 for VOC at 1345 |
| 40 | | 60 | 60 | 51.3 | | | | Becomes wet ▽ | |
| | | | | 76.7 | | | | | |
| | | | | | | | | | Geoprobe sampling ended at 43 ft bgs due to issue with sand blow-in. Soil to 52 ft logged via auger cuttings. |
| 45 | | | | | | | | | |

Completion Depth: **52.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **M. Miller, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 40 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**MW-18**



Starting Date: 11/28/12
Completion Date: 11/29/12
Casing Elevation: 442.04
Ground Elevation: 442.37

Quadrangle
Sec:34 (NE 1/4 of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793161.68
E: (Y):2322252.27

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | SP | Same: Medium dense, wet, brown, medium to coarse grained sand (SP) | |
| | | | | | | | | Bottom of boring at 52 ft bgs | |
| 55 | | | | | | | | | |
| 60 | | | | | | | | | |
| 65 | | | | | | | | | |
| 70 | | | | | | | | | |

Completion Depth: **52.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **M. Miller, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 40 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**MW-19**



Starting Date: 12/3/12
Completion Date: 12/4/12
Casing Elevation: 442.77
Ground Elevation: 443.13

Quadrangle
Sec:34 (E - center of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793022.82
E: (Y):2322256.05

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 0.0 | | | ASPHALT | Asphalt cover | Air knifed to 10' bgs to clear utilities. |
| | | | | 0.0 | | | FILL | Dense, dry, dark brown, Sandy FILL, trace clay and gravel (FILL) | |
| | | | | 0.0 | | | SC | Loose, moist, dark brown, fine grained clayey SAND (SC) | |
| | | | | 0.0 | | | | Soft, moist, dark brown, low plasticity, Sandy CLAY (CL) | |
| | | | | 0.0 | | | CL | | |
| 5 | | | | 0.0 | | | | Becomes gray with black | Hydrocarbon odor |
| | | | | 0.0 | | | | Loose, moist to dry, gary, fine grained SAND (SP) | |
| | | | | 12.6 | | | | Becomes light gray | |
| | | | | 285 | | | | | |
| | | | | 1301 | | | | | |
| 10 | | 36 | 36 | 567.9 | | | SP | Becomes loose to medium dense, gray and light brown | |
| | | | | 1 471 | | | | | Sample MW-19-13 for VOCs at 1320 |
| 15 | | 60 | 48 | 715.4 | | | | | |
| | | | | 1 017 | | | | | |
| | | 60 | 60 | 349.4 | | | | Soft, moist to wet, brown SILT (ML), with fine sand | |
| 20 | | | | | | | ML | Becomes wet | Sample MW-19-20 for VOCs at 1325 |
| | | | | 22.3 | | | CL | Soft, moist, gray, low plastic CLAY (CL), with silt | |
| | | | | 32.7 | | | | Loose, moist, brown, medium grained SAND (SP) | |
| | | | | 34.5 | | | SP | | |

Completion Depth: **53.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **M. Miller, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 42 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**MW-19**



Starting Date: 12/3/12
Completion Date: 12/4/12
Casing Elevation: 442.77
Ground Elevation: 443.13

Quadrangle
Sec:34 (E - center of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793022.82
E: (Y):2322256.05

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | 60 | 48 | 11.3 | | | | Same: Loose, moist, brown, medium grained SAND (SP) | |
| | | | | | | | | Becomes medium dense | |
| 30 | | 60 | 60 | 144.8 | | | | | |
| | | | | 208.4 | | | | 2" silty clay seam | |
| | | | | 377.0 | | | | | Sample MW-19-32 for VOCs at 1335 |
| | | | | | | | | 3" silty clay seam | |
| 35 | | 60 | 48 | 172.8 | | | | | |
| | | | | 4.3 | | | SP | | |
| | | | | 15.6 | | | | | |
| 40 | | 60 | 48 | 4.3 | | | | | |
| | | | | | | | | Becomes wet ▽ | |
| | | | | 885.4 | | | | | Geoprobe sampling ended at 43 ft bgs due to sand blow-in issues. Soil to 53 ft bgs logged via auger cuttings |
| 45 | | | | 938.6 | | | | | |
| | | | | 715.8 | | | | | |
| | | | | 769.1 | | | | | |

Completion Depth: **53.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **M. Miller, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 42 ft., After ATD hrs.
Water Depth: ____ ft., After ____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**MW-19**



Starting Date: 12/3/12
Completion Date: 12/4/12
Casing Elevation: 442.77
Ground Elevation: 443.13

Quadrangle
Sec:34 (E - center of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793022.82
E: (Y):2322256.05

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 1177<br>1159 | | | SP | Same: Medium dense, wet, brown, medium grained SAND (SP) | |
| 55 | | | | | | | | Bottom of boring at 53 ft bgs | |
| 60 | | | | | | | | | |
| 65 | | | | | | | | | |
| 70 | | | | | | | | | |

Completion Depth: **53.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **M. Miller, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 42 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

## MW-20



Starting Date: 12/5/12
Completion Date: 12/6/12
Casing Elevation: 443.67
Ground Elevation: 444.02

Quadrangle
Sec:34 (SE 1/4 - of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792820.76
E: (Y):2322261.01

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ASPHALT | Asphalt cover | Air knifed to 10' bgs to clear utilities. |
| | | | | 0.0 | | | FILL | Loose, brown, moist, clayey Sand FILL, trace gravel (FILL) | |
| | | | | 0.0 | | | | Gravel grades out | |
| | | | | 0.0 | | | | Loose, dry to moist, reddish brown, fine grained SAND (SP), trace clay | |
| | | | | 0.0 | | | | | |
| 5 | | | | 0.0 | | | | Clay grades out | |
| | | | | 0.0 | | | | Becomes light brown, dry | |
| | | | | | | | SP | | |
| 10 | | 36 | 30 | 0.0 | | | | Becomes brown | Sampled MW-20-11 for VOC at 1325 |
| | | | | | | | CL | Soft to medium dense, moist to dry, brown and gray, Silty CLAY (CL) | |
| | | 60 | 40 | 0.0 | | | | Loose, moist, brown, fine to medium grained SAND (SP) | |
| 15 | | | | 0.0 | | | | | |
| | | | | 0.1 | | | SP | | |
| | | 60 | 50 | 35 | | | | | |
| 20 | | | | 260.1 | | | | Becomes gray, wet | Sampled MW-20-21 for VOC at 1335 |
| | | | | 5.8 | | | | Soft, moist to wet, light brown to gray, low plastic CLAY (CL), trace sand | |
| | | | | 3.2 | | | CL | | |

Completion Depth: **53.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **M. Miller, W. Pennigton**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 42 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

## MW-20



Starting Date: 12/5/12
Completion Date: 12/6/12
Casing Elevation: 443.67
Ground Elevation: 444.02

Quadrangle
Sec:34 (SE 1/4 - of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792820.76
E: (Y):2322261.01

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | 60 | 46 | 2.3 | | | SP | Loose, moist, brown, medium grained SAND (SP) | |
| | | | | | | | | Medium stiff, moist, brown, low plastic CLAY (CL) | |
| 30 | | 60 | 60 | 3.3 | | | CL | | |
| | | | | 0.5 | | | | | |
| | | | | 0.3 | | | | Loose to medium dense, moist, brown, medium to coarse grained SAND (SP) | |
| 35 | | 60 | 48 | 0.2 | | | | | |
| | | | | 0.2 | | | | | |
| | | 60 | 48 | 0.2 | | | SP | | |
| 40 | | | | 0.2 | | | | | Sampled MW-20-41 for VOC at 1340 |
| | | | | 29.1 | | | | ▽ Becomes wet | |
| 45 | | 60 | 54 | 67.4 | | | | | |
| | | | | 400.5 | | | | | |
| | | | | 67.5 | | | | | Geoprobe sampling ended at 48 ft bgs due to sand blow-in issues. Soil to 53 ft bgs logged via auger cuttings. |

Completion Depth: **53.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **M. Miller, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 42 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger
Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-
Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**MW-20**



Starting Date: 12/5/12
Completion Date: 12/6/12
Casing Elevation: 443.67
Ground Elevation: 444.02

Quadrangle
Sec:34 (SE 1/4 - of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792820.76
E: (Y):2322261.01

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 70.1<br>89.8 | | | SP | Same: Loose to medium dense, wet, brown, medium to coarse grained SAND (SP) | |
| 55 | | | | | | | | Bottom of boring at 53 ft bgs | |
| 60 | | | | | | | | | |
| 65 | | | | | | | | | |
| 70 | | | | | | | | | |

Completion Depth: **53.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **M. Miller, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 42 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**MW-21**



Starting Date: 12/6/12
Completion Date: 12/7/12
Casing Elevation: 443.81
Ground Elevation: 444.10

Quadrangle
Sec:34 (SE 1/4 - of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792288.33
E: (Y):2322275.06

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ASPHALT | Asphalt cover | Air knifed to 10' bgs to clear utilities. |
| | | | | | | | ML | Moist, reddish brown, Clayey SILT (ML) | |
| | | | | | | | CL | Stiff, moist, reddish brown, Silty CLAY (CL) | |
| | | | | | | | SC | Moist, reddish brown, fine grained Clayey SAND (SC), trace silt | |
| 5 | | | | | | | | Loose, moist, brown, fine to medium grained SAND (SP) | |
| 10 | | 36 | 30 | 0.2 | | | | | |
| 15 | | 60 | 36 | 0.2 | | | SP | Becomes moist to wet | |
| | | | | 43.5 | | | | 1" gray and black low plastic clay seam<br>Becomes moist | |
| 20 | | 60 | 40 | 49.0 | | | | Trace black banding (2") | |
| | | | | 63.4 | | | | | Sample MW-21-21 for VOCs at 1155 |
| | | | | 15.7 | | | | | |
| | | | | 11.8 | | | | | |

Completion Depth: **52.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 41 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

## MW-21



Starting Date: 12/6/12
Completion Date: 12/7/12
Casing Elevation: 443.81
Ground Elevation: 444.10

Quadrangle
Sec:34 (SE 1/4 - of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792288.33
E: (Y):2322275.06

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | 60 | 44 | 182.3 | | | | Same: Loose, moist, brown, fine to medium grained SAND (SP) | |
| | | 60 | 48 | 282.3 | | | | Trace black banding (3") | |
| 30 | | | | 397.1 | | | | 2" brown and gray low plastic clay seam | Sample MW-21-31 for VOCs at 1200 |
| | | | | 14.0 | | | | | |
| | | 60 | 50 | 30.1 | | | | Trace black banding (2") | |
| 35 | | | | 4.7 | | | SP | | |
| | | 60 | 50 | 1.4 | | | | | |
| 40 | | | | 69.4 | | | | Becomes wet, gray ▽ | Sample MW-21-41 for VOCs at 1205 |
| | | | | 224.2 | | | | | |
| | | 60 | 52 | 511.5 | | | | | |
| 45 | | | | 3 | | | | | |
| | | | | 681 | | | | | |
| | | | | 1 | | | | | Geoprobe sampling ended at 48 ft bgs due to rods getting locked up. Soil to 52 ft bgs logged via auger cuttings. |
| | | | | 779 | | | | | |

Completion Depth: **52.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 41 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**MW-21**



Starting Date: 12/6/12
Completion Date: 12/7/12
Casing Elevation: 443.81
Ground Elevation: 444.10

Quadrangle
Sec:34 (SE 1/4 - of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792288.33
E: (Y):2322275.06

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 1<br>757 | | | SP | Same: Loose, wet, gray, fine to medium grained SAND (SP) | |
| | | | | | | | | Bottom of boring at 52 ft bgs | |

55
60
65
70

Completion Depth: **52.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 41 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**MW-22**



Starting Date: 11/29/12
Completion Date: 11/30/12
Casing Elevation: 442.16
Ground Elevation: 442.49

Quadrangle
Sec:34 (NE 1/4 - of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793281.59
E: (Y):2321996.63

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | ASPHALT | Asphalt cover | Air knifed to 10' bgs to clear utilities. |
| | | | | | | | FILL | Gravel and dry, dark brown, Silty CLAY (FILL) | |
| | | | | | | | CL | Loose, moist, reddish brown, Silty CLAY (CL) | |
| 5 | | | | | | | SP | Loose, moist, reddish brown, fine grained SAND (SP)<br>Becomes brown, fine to medium grained | |
| 10 | | 36 | 36 | 0.0<br>0.1 | | | | | Sampled MW-22-12 for VOCs at 1345 |
| 15 | | 60 | 46 | 0.5<br>93.3 | | | SM | Loose, wet, brown and gray, fine grained Silty SAND (SM) | |
| 20 | | 60 | 48 | 2.7<br>101.8<br>1<br>147<br>753.8 | | | SP | Loose, dry, light brown, fine to medium grained SAND (SP)<br>Becomes moist<br>Becomes gray, fine grained<br>Becomes fine to medium grained<br>Becomes wet | Sampled MW-22-23 for VOCs at 1440 |

Completion Depth: **50.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 41.25 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger
Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-
Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

## MW-22



Starting Date: 11/29/12
Completion Date: 11/30/12
Casing Elevation: 442.16
Ground Elevation: 442.49

Quadrangle
Sec:34 (NE 1/4 - of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793281.59
E: (Y):2321996.63

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | 60 | 60 | | | | SP | Same: Loose, wet, gray, fine to medium grained SAND (SP) | |
| | | | | 448.9 | | | SM | Dense, wet, light brown, fine grained, Silty SAND (SM) | |
| | | | | | | | | Medium dense, dry, brown, fine to medium grained SAND (SP) | |
| | | 60 | 60 | 795.1 | | | | | |
| 30 | | | | 583.7 | | | | | |
| | | | | 534.6 | | | | | |
| | | 60 | 60 | 463.8 | | | | | |
| 35 | | | | 943.2 | | | | Becomes gray brown | |
| | | | | | | | | Becomes medium grained | |
| | | 60 | 50 | 821.9 | | | SP | Becomes brown | Sampled MW-22-39 for VOCs at 1450 |
| 40 | | | | 45.0 | | | | Becomes wet ▽ | |
| | | | | 207.9 | | | | | Geoprobe sampling ended at 43 ft bgs due to blow-in issues with the sand. Soil to 50 ft bgs logged via auger cuttings. |
| 45 | | | | | | | | Bottom of boring at 50 ft bgs | |

Completion Depth: **50.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push/HSA**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 41.25 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

## P-55 Replacement Well



Starting Date: 1/10/13
Completion Date: 1/10/13
Casing Elevation: 443.78
Ground Elevation: 444.20

Quadrangle
Sec:34 (E - center of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793803.04
E: (Y):2322278.76

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | GRAVEL | Gravel (FILL) | Air knifed to 10' bgs to clear utilities. |
| | | | | 1.1 | | | | Soft, moist, brown, low plastic sandy CLAY (FILL), trace gravel | |
| | | | | 1.5 | | | | | |
| | | | | 1.4 | | | FILL | | |
| | | | | 1.4 | | | | | |
| 5 | | | | 1.8 | | | | | |
| | | | | 2.2 | | | | Loose, moist, brown, fine grained SAND (SP), with clay | |
| | | | | 1.7 | | | | Clay grades out | |
| | | | | 2.0 | | | | | |
| | | | | 1.5 | | | | | |
| | | | | 1.2 | | | | | |
| 10 | | 36 | 27 | 0.8 | | | | Becomes medium dense, brown with gray, silty | |
| | | | | 1.2 | | | | Becomes brown | |
| 15 | | 60 | 54 | 1.6 | | | SP | | |
| | | | | 3.0 | | | | Silt grades out | |
| | | | | 1.5 | | | | | |
| 20 | | 60 | 57 | 1.5 | | | | | |
| | | | | 2.2 | | | | 3" seam of dark gray | |
| | | | | | | | | Becomes fine to medium grained | |
| | | | | 1.9 | | | | | |

Completion Depth: **53.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 43 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger
Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-
Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL
## P-55 Replacement Well



Starting Date: 1/10/13
Completion Date: 1/10/13
Casing Elevation: 443.78
Ground Elevation: 444.20

Quadrangle
Sec:34 (E - center of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793803.04
E: (Y):2322278.76

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | 60 | 54 | 2.2 | | | | Same: Medium dense, moist, brown, fine to medium grained Silty SAND (SP) | |
| | | 60 | 54 | 1.8 | | | SP | | |
| 30 | | | | 1.6 | | | | Becomes gray | |
| | | | | 2.0 | | | | | |
| | | 60 | 59 | 244.6 | | | CL | Medium stiff, moist, brown, low plastic CLAY (CL) | |
| 35 | | | | 19.3 | | | SP | Medium dense, moist, gray, fine to medium dense, SAND (SP) | |
| | | | | 39.2 | | | | Becomes brown | |
| | | | | | | | | Becomes gray | |
| 40 | | 60 | 60 | | | | ML | Soft to medium stiff, moist, gray SILT (ML) | |
| | | | | | | | SP | Medium dense to dense, wet, brown, medium to coarse grained SAND (SP) | |
| | | | | 397.2 | | | ML-CL | Soft to medium stiff, moist, gray, low plastic Clayey SILT (ML-CL) | |
| | | | | | | | SP | Medium dense, moist, gray, fine grained SAND (SP) | |
| | | | | 1 024 | | | CL | Soft to medium stiff, moist, gray, low plastic CLAY (CL) ▽ | |
| | | | | 805.2 | | | SP | Medium dense to dense, wet, brown, medium to coarse grain SAND (SP) | Sample P-55R-43 for VOCs at 1305 |
| 45 | | 60 | 54 | 389.8 | | | ML | Medium stiff, wet, gray, low plastic, SILT (ML), with clay | |
| | | | | 104.7 | | | SP | Medium dense to dense, wet, grayish brown, medium to coarse grained SAND (SP) | |
| | | | | 134.5 | | | | Becomes dark gray | |

Completion Depth: **53.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 43 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

## P-55 Replacement Well



Starting Date: 1/10/13
Completion Date: 1/10/13
Casing Elevation: 443.78
Ground Elevation: 444.20

Quadrangle
Sec:34 (E - center of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793803.04
E: (Y):2322278.76

| Depth In feet | Well Construction | Inches Driven | Inches Recovered | PID (ppm) | Sampler Graphic | Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|
| | | 60 | 30 | 244.7 | | | SP | Same: Medium dense to dense, wet, dark gray, medium to coarse grained SAND (SP) | Sample P-55R-51 for VOCs at 1310 |
| 55 | | | | | | | | Bottom of boring at 53 ft bgs | |
| 60 | | | | | | | | | |
| 65 | | | | | | | | | |
| 70 | | | | | | | | | |

Completion Depth: **53.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana/WRR Well Drilling**
Drilling Contractor: **Roberts Environmental Drilling Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 43 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +1 WELL 21562850.15000 (ROXANA MW 2013).GPJ URSSTLEV.GDT 3/4/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**VMP-47** 

Starting Date: 12/10/12
Completion Date: 12/10/12
Casing Elevation: Not Installed
Ground Elevation: 445.57

Quadrangle
Sec:34 (NE 1/4 of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):794065.93
E: (Y):2322206.09

| Depth In feet | Construction: VMP-47-30 | Construction: VMP-47-20 | Construction: VMP-47-10 | Construction: VMP-47-5 | Inches Driven | Inches Recovered | PID (ppm) | Graphic | Sampler Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | ASPHALT | Asphalt and gravel | Air knifed to 10' bgs to clear utilities. |
| 5 | | | | | | | | | | FILL | Brown, moist, medium to coarse grained SAND (FILL), with trace gravel<br>Gravel grades out<br>Trace organics<br>Trace gravel<br>Becomes with organics | |
| 10 | | | | | 36 | 36 | 0.0<br>0.0 | | | SP | Loose to medium dense, dry to moist, brown, fine to medium grained SAND (SP) | Sampled VMP-47-12 for VOC at 1340 |
| 15 | | | | | 60 | 45 | 0.0<br>1.0 | | | SP | Becomes moist, gray and brown<br>1" gray, low plastic, clay seam | |
| 20 | | | | | 60 | 44 | 5.0<br>1.2<br>3.7 | | | SP | Becomes gray | Sampled VMP-47-19 for VOC at 1345 |
| | | | | | | | 3.5 | | | SP | | |

Completion Depth: **33.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: NE ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +4 WELLS 21562850.15000 (ROXANA VMP 2013).GPJ URSSTLEV.GDT 3/1/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**VMP-47** 

Starting Date: 12/10/12
Completion Date: 12/10/12
Casing Elevation: Not Installed
Ground Elevation: 445.57

Quadrangle
Sec:34 (NE 1/4 of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):794065.93
E: (Y):2322206.09

| Depth In feet | Construction: VMP-47-30 | Construction: VMP-47-20 | Construction: VMP-47-10 | Construction: VMP-47-5 | Inches Driven | Inches Recovered | PID (ppm) | Graphic | Sampler Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 60 | 44 | | | | SP | Same: Loose to medium dense, moist, gray, fine to medium grained SAND (SP) | |
| | | | | | | | | | | ML | Soft to medium stiff, moist, gray, Clayey SILT (ML) | |
| | | | | | | | 1.4 | | | | Loose to medium dense, moist, brown, medium to coarse grained SAND (SP) | |
| | | | | | | | 4.9 | | | SP | | Sampled VMP-47-29 for VOC at 1350 |
| 30 | | | | | 60 | 45 | | | | | | |
| | | | | | | | 4.7 | | | | | |
| | | | | | | | 2.3 | | | | | |
| | | | | | | | | | | | Bottom of boring at 33 ft. bgs | |
| 35 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | |

Completion Depth: **33.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: NE ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +4 WELLS 21562850.15000 (ROXANA VMP 2013).GPJ URSSTLEV.GDT 3/1/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

## VMP-48



Starting Date: 12/11/12
Completion Date: 12/11/12
Casing Elevation: Not Installed
Ground Elevation: 443.72

Quadrangle
Sec:34 (NE 1/4 of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793748.22
E: (Y):2322150.34

| Depth In feet | Construction: VMP-48-30 | Construction: VMP-48-20 | Construction: VMP-48-10 | Construction: VMP-48-5 | Inches Driven | Inches Recovered | PID (ppm) | Graphic | Sampler Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | ASPHALT | Asphalt and gravel | Air knifed to 10' bgs to clear utilities. |
| 5 | | | | | | | | | | CL | Loose, moist, brown Silty CLAY (CL) | |
| | | | | | | | | | | | Becomes stiff, with gray mottles, silt grades out | |
| 10 | | | | | | | | | | SC | Loose to medium dense, moist, brown, clayey SAND (SC) | |
| | | | | | 36 | 36 | 0.0<br>0.2 | | | SP | Medium dense, moist, brown, fine grained SAND (SP) | |
| 15 | | | | | 60 | 41 | 0.2<br>0.2 | | | SP | Becomes loose, fine to medium grained | Sampled VMP-48-13 for VOC at 0955 |
| 20 | | | | | 60 | 42 | 0.5<br>0.7<br>0.2 | | | CL<br>SP | Soft, moist, brown, some gray, low plastic CLAY (CL)<br>Loose, moist, gray, fine to medium grained SAND (SP) | Sampled VMP-48-21 for VOC at 1000 |
| | | | | | | | 1.4 | | | | | |

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: NE ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger
Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-
Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +4 WELLS 21562850.15000 (ROXANA VMP 2013).GPJ URSSTLEV.GDT 3/1/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**VMP-48** 

Starting Date: 12/11/12
Completion Date: 12/11/12
Casing Elevation: Not Installed
Ground Elevation: 443.72

Quadrangle
Sec:34 (NE 1/4 of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793748.22
E: (Y):2322150.34

| Depth In feet | Construction: VMP-48-30 | Construction: VMP-48-20 | Construction: VMP-48-10 | Construction: VMP-48-5 | Inches Driven | Inches Recovered | PID (ppm) | Graphic | Sampler Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | | | | | 60 | 44 | 1.6 | | | SP | Same: Loose, moist, brown fine to medium grained SAND (SP) | Sampled VMP-48-27 for VOC at 1005 |
| | | | | | 36 | 24 | 1.6<br>1.1 | | | | | |
| 35 | | | | | | | | | | | Bottom of boring at 31 ft. bgs | |
| 40 | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | |

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: NE ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +4 WELLS 21562850.15000 (ROXANA VMP 2013).GPJ URSSTLEV.GDT 3/1/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**VMP-49** 

Starting Date: 12/12/12
Completion Date: 12/12/12
Casing Elevation: Not Installed
Ground Elevation: 442.35

Quadrangle
Sec:34 (E - center of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793442.96
E: (Y):2322153.23

| Depth In feet | Construction: VMP-49-30 | Construction: VMP-49-20 | Construction: VMP-49-10 | Construction: VMP-49-5 | Inches Driven | Inches Recovered | PID (ppm) | Graphic | Sampler Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | ASPHALT | Asphalt and gravel | Air knifed to 10' bgs to clear utilities. |
| | | | | | | | | | | FILL | Loose, dry, dark brown, Silty CLAY (FILL), trace organics | |
| 5 | | | | | | | | | | CL | Loose, dry, brown with gray mottles, Silty CLAY (CL) | |
| | | | | | | | | | | ML | Moist, brown Clayey SILT (ML) | |
| | | | | | | | | | | SP | Meduim dense, moist, brown, fine grained SAND (SP) | |
| 10 | | | | | 36 | 36 | 0.3 | | | | Becomes dark brown, fine to medium grained with silt | Sampled VMP-49-11 for VOC at 1035 |
| | | | | | | | 0.2 | | | | Becomes brown, silt grades out | |
| | | | | | 60 | 42 | 0.1 | | | | Becomes loose to medium dense | |
| 15 | | | | | | | 0.1 | | | | | |
| | | | | | | | 0.2 | | | | | |
| 20 | | | | | 60 | 48 | | | | | | |
| | | | | | | | 0.2 | | | CL | Soft, moist, brown, low plastic CLAY (CL) | Sampled VMP-49-21 for VOC at 1040 |
| | | | | | | | 0.3 | | | | Medium dense, dry to moist, gray, fine grained SAND (SP) | |
| | | | | | | | | | | SP | | |
| | | | | | | | 0.4 | | | | | |

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, J. Staetter**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: NE ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger
Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-
Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +4 WELLS 21562850.15000 (ROXANA VMP 2013).GPJ URSSTLEV.GDT 3/1/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**VMP-49** 

Starting Date: 12/12/12
Completion Date: 12/12/12
Casing Elevation: Not Installed
Ground Elevation: 442.35

Quadrangle
Sec:34 (E - center of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793442.96
E: (Y):2322153.23

| Depth In feet | Construction: VMP-49-30 | Construction: VMP-49-20 | Construction: VMP-49-10 | Construction: VMP-49-5 | Inches Driven | Inches Recovered | PID (ppm) | Graphic | Sampler Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 60 | 48 | | | | SP | Same: Medium dense, dry to moist, gray, fine grained SAND (SP) | |
| | | | | | | | 5.7 | | | CL | Medium stiff to stiff, moist, brown, low plastic CLAY (CL) | |
| | | | | | 36 | 27 | 7.4 | | | SP | Medium dense, dry to moist, gray, fine to medium grained SAND (SP) | |
| 30 | | | | | | | 13.3 | | | | | Sampled VMP-49-30 for VOC at 1045 |
| | | | | | | | | | | | Bottom of boring at 31 ft. bgs | |
| 35 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | |

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, J. Staetter**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: NE ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

- Geoprobe
- Air Knife/Hand Auger Sampler
- Air Rotary
- Sonic
- Splitspoon Sampler
- Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +4 WELLS 21562850.15000 (ROXANA VMP 2013).GPJ URSSTLEV.GDT 3/1/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**VMP-50** 

Starting Date: 12/11/12
Completion Date: 12/11/12
Casing Elevation: Not Installed
Ground Elevation: 443.83

Quadrangle
Sec:34 (E - center of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793150.29
E: (Y):2322166.22

| Depth In feet | Construction: VMP-50-30 | Construction: VMP-50-20 | Construction: VMP-50-10 | Construction: VMP-50-5 | Inches Driven | Inches Recovered | PID (ppm) | Graphic | Sampler Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | ASPHALT | Asphalt and gravel. | Air knifed to 10' bgs to clear utilities. |
| | | | | | | | | | | ML | Moist, dark brown, Clayey SILT (ML) | |
| 5 | | | | | | | | | | SP | Moist, brown, fine grained SAND (SP) | |
| | | | | | | | | | | SP | Becomes fine to medium grained | |
| 10 | | | | | | | | | | SM | Medium dense, moist, brown, fine grained Silty SAND (SM) | |
| | | | | | 36 | 36 | 0.7 | | | SP | Medium dense, moist, brown, fine grained SAND (SP) | |
| | | | | | | | 1.0 | | | | | Sampled VMP-50-13 for VOC at 1330 |
| 15 | | | | | 60 | 46 | 4.2 | | | | | |
| | | | | | | | 3.2 | | | | | |
| | | | | | | | 1.4 | | | | Becomes gray | |
| 20 | | | | | 60 | 48 | 1717 | | | | | Sampled VMP-50-21 for VOC at 1335 |
| | | | | | | | 1339 | | | | | |
| | | | | | | | | | | | Becomes wet | |
| | | | | | | | 186.2 | | | | | |

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 23.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.

▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +4 WELLS 21562850.15000 (ROXANA VMP 2013).GPJ URSSTLEV.GDT 3/1/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**VMP-50** 

Starting Date: 12/11/12
Completion Date: 12/11/12
Casing Elevation: Not Installed
Ground Elevation: 443.83

Quadrangle
Sec:34 (E - center of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):793150.29
E: (Y):2322166.22

| Depth In feet | Construction: VMP-50-30 | Construction: VMP-50-20 | Construction: VMP-50-10 | Construction: VMP-50-5 | Inches Driven | Inches Recovered | PID (ppm) | Graphic | Sampler Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 60 | 53 | | | | CL | Soft, moist to wet, brown, low plastic Silty CLAY (CL) | |
| | | | | | | | 55.8 | | | | Medium dense, moist, brown, medium grained SAND (SP) | |
| | | | | | 36 | 28 | 37.1 | | | SP | | Sampled VMP-50-29 for VOC at 1340 |
| 30 | | | | | | | 37.8 | | | | | |
| | | | | | | | | | | | Bottom of boring at 31 ft bgs. | |
| 35 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | |

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 23.5 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

- Geoprobe
- Air Knife/Hand Auger Sampler
- Air Rotary
- Sonic
- Splitspoon Sampler
- Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +4 WELLS 21562850.15000 (ROXANA VMP 2013).GPJ URSSTLEV.GDT 3/1/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**VMP-51** 

Starting Date: 12/12/12
Completion Date: 12/12/12
Casing Elevation: Not Installed
Ground Elevation: 444.27

Quadrangle
Sec:34 (E - center of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792843.27
E: (Y):2322072.37

| Depth In feet | Construction: VMP-51-30 | Construction: VMP-51-20 | Construction: VMP-51-10 | Construction: VMP-51-5 | Inches Driven | Inches Recovered | PID (ppm) | Graphic | Sampler Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | ASPHALT | Asphalt and gravel | Air knifed to 10' bgs to clear utilities. |
| | | | | | | | | | | ML | Moist, dark brown Clayey SILT (ML) | |
| | | | | | | | | | | CL | Soft, moist, brown Silty CLAY (CL) | |
| | | | | | | | | | | ML | Moist, brown Clayey SILT (ML) | |
| 5 | | | | | | | | | | SP | Moist, brown, fine grained SAND (SP) | |
| | | | | | | | | | | | Becomes fine to medium grained | |
| | | | | | | | | | | | Becomes wet | |
| 10 | | | | | | | | | | CL | Soft, moist to wet, brown, low plastic CLAY (CL) | |
| | | | | | 36 | 30 | 0.1 | | | | Medium dense, moist, brown, medium grained SAND (SP) | |
| | | | | | | | 0.3 | | | | | |
| | | | | | 60 | 42 | 0.4 | | | | | Sampled VMP-51-14 for VOC at 1315 |
| 15 | | | | | | | 0.4 | | | SP | | |
| | | | | | 60 | 42 | 0.2 | | | | | |
| 20 | | | | | | | 0.6 | | | | | Sampled VMP-51-21 for VOC at 1325 |
| | | | | | | | 0.2 | | | | | |
| | | | | | | | 0.4 | | | | | |

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, J. Staetter**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 11 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger
Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-
Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +4 WELLS 21562850.15000 (ROXANA VMP 2013).GPJ URSSTLEV.GDT 3/1/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**VMP-51** 

Starting Date: 12/12/12
Completion Date: 12/12/12
Casing Elevation: Not Installed
Ground Elevation: 444.27

Quadrangle
Sec:34 (E - center of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792843.27
E: (Y):2322072.37

| Depth In feet | Construction: VMP-51-30 | Construction: VMP-51-20 | Construction: VMP-51-10 | Construction: VMP-51-5 | Inches Driven | Inches Recovered | PID (ppm) | Graphic | Sampler Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | | | | | 60 | 48 | 0.3 | | | SP | Same: Medium dense, moist, brown, medium grained SAND (SP) | |
| | | | | | 36 | 26 | 0.1<br>0.3 | | | | | |
| | | | | | | | | | | | Bottom of boring at 31 ft. bgs | Sampled VMP-51-31 for VOC at 1330 |
| 35 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | |

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, J. Staetter**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 11 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +4 WELLS 21562850.15000 (ROXANA VMP 2013).GPJ URSSTLEV.GDT 3/1/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

## VMP-52



Starting Date: 12/13/12
Completion Date: 12/13/12
Casing Elevation: Not Installed
Ground Elevation: 443.73

Quadrangle
Sec:34 (E - center of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792527.81
E: (Y):2322166.68

| Depth In feet | Construction: VMP-52-30 | Construction: VMP-52-20 | Construction: VMP-52-10 | Construction: VMP-52-5 | Inches Driven | Inches Recovered | PID (ppm) | Graphic | Sampler Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | ASPHALT | Asphalt and gravel | Air knifed to 10' bgs to clear utilities. |
| | | | | | | | | | | CL | Moist, dark brown Silty CLAY (CL) | |
| 5 | | | | | | | | | | ML | Moist, dark brown, Clayey SILT (ML)<br>Becomes brown with gray mottling | |
| | | | | | | | | | | SP | Moist, brown, fine grained SAND (SP) | |
| 10 | | | | | | | | | | CL | Soft, moist, brown, low plastic, Sandy CLAY (CL) | |
| | | | | | 36 | 24 | 0.3<br>0.3 | | | SP | Loose to medium dense, moist, brown, fine to medium grained SAND (SP), trace clay seams no > 1" | |
| 15 | | | | | 60 | 36 | 0.2<br>0.1 | | | SP | Clay seams grade out | Sampled VMP-52-13 for VOC at 1015 |
| 20 | | | | | 60 | 36 | 0.3<br>0.2<br>0.3 | | | SP | | |
| | | | | | | | 1.0 | | | | | |

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, J. Staetter**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: NE ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger
Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-
Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +4 WELLS 21562850.15000 (ROXANA VMP 2013).GPJ URSSTLEV.GDT 3/1/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

## VMP-52



Starting Date: 12/13/12
Completion Date: 12/13/12
Casing Elevation: Not Installed
Ground Elevation: 443.73

Quadrangle
Sec:34 (E - center of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792527.81
E: (Y):2322166.68

| Depth In feet | Construction: VMP-52-30 | Construction: VMP-52-20 | Construction: VMP-52-10 | Construction: VMP-52-5 | Inches Driven | Inches Recovered | PID (ppm) | Graphic | Sampler Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | | | | | 60 | 36 | 0.8 | | | SP | Same: Loose to medium dense, moist, brown, fine to medium grained SAND (SP) | Sampled VMP-52-25 for VOC at 1020 |
| | | | | | 36 | 26 | 0.5<br>0.4 | | | | | Sampled VMP-52-29 for VOC at 1025 |
| | | | | | | | | | | | Bottom of boring at 31 ft. bgs | |
| 35 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | |

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, J. Staetter**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: NE ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +4 WELLS 21562850.15000 (ROXANA VMP 2013).GPJ URSSTLEV.GDT 3/1/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

## VMP-53



Starting Date: 12/13/12
Completion Date: 12/13/12
Casing Elevation: Not Installed
Ground Elevation: 443.55

Quadrangle
Sec:34 (SE 1/4 of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792228.78
E: (Y):2322169.96

| Depth In feet | Construction: VMP-53-30 | Construction: VMP-53-20 | Construction: VMP-53-10 | Construction: VMP-53-5 | Inches Driven | Inches Recovered | PID (ppm) | Graphic | Sampler Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | ASPHALT | Asphalt and gravel | Air knifed to 10' bgs to clear utilities. |
| | | | | | | | | | | FILL | Moist, brown Clayey SILT (FILL), trace gravel | |
| | | | | | | | | | | SP | Loose, moist, light brown, fine to meduim grained SAND (SP) | |
| | | | | | | | | | | | Becomes brown | |
| 5 | | | | | | | | | | | Becomes with clay | |
| 10 | | | | | 36 | 36 | 0.6<br>0.7 | | | | Clay grades out | |
| 15 | | | | | 60 | 52 | 0.4<br>0.7 | | | | | Sampled VMP-53-15 for VOC at 1325 |
| 20 | | | | | 60 | 48 | 0.4<br>0.8 | | | | | |
| | | | | | | | 0.7 | | | | | |
| | | | | | | | 0.7 | | | | | |

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, J. Staetter**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: NE ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +4 WELLS 21562850.15000 (ROXANA VMP 2013).GPJ URSSTLEV.GDT 3/1/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**VMP-53** 

Starting Date: 12/13/12
Completion Date: 12/13/12
Casing Elevation: Not Installed
Ground Elevation: 443.55

Quadrangle
Sec:34 (SE 1/4 of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792228.78
E: (Y):2322169.96

| Depth In feet | Construction: VMP-53-30 | Construction: VMP-53-20 | Construction: VMP-53-10 | Construction: VMP-53-5 | Inches Driven | Inches Recovered | PID (ppm) | Graphic | Sampler Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 60 | 48 | 1.0 | | | SP | Same: Loose, moist, brown, fine to meduim grained SAND (SP) | Sampled VMP-53-27 for VOC at 1340 |
| 30 | | | | | 36 | 30 | 0.6<br>0.8 | | | CL | Medium stiff, moist, brown, low plastic CLAY (CL) | |
| | | | | | | | | | | | Bottom of boring at 31 ft. bgs | Sampled VMP-53-31 for VOC at 1345 |
| 35 | | | | | | | | | | | | |
| 40 | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | |

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, J. Staetter**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: NE ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +4 WELLS 21562850.15000 (ROXANA VMP 2013).GPJ URSSTLEV.GDT 3/1/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**VMP-54** 

Starting Date: 12/14/12
Completion Date: 12/14/12
Casing Elevation: Not Installed
Ground Elevation: 433.65

Quadrangle
Sec:34 (SE 1/4 of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792230.14
E: (Y):2321840.44

| Depth In feet | Construction: VMP-54-30 | Construction: VMP-54-20 | Construction: VMP-54-10 | Construction: VMP-54-5 | Inches Driven | Inches Recovered | PID (ppm) | Graphic | Sampler Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | ASPHALT | Asphalt and gravel | Air knifed to 10' bgs to clear utilities. |
| 5 | | | | | | | | | | | Meduim dense, moist, brown, fine to meduim grained SAND (SP) | |
| | | | | | | | | | | | Becomes medium grained | |
| 10 | | | | | 36 | 36 | 0.6<br>1.2 | | | SP | | |
| 15 | | | | | 60 | 44 | 1.8<br>1.3 | | | | | Sampled VMP-54-15 for VOC at 0911 |
| 20 | | | | | 60 | 42 | 1.7<br>0.7<br>0.9 | | | | Becomes medium to coarse grained<br>Trace black banding for 3" | |
| | | | | | | | 1.3 | | | | | |

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: NE ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger
Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-
Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +4 WELLS 21562850.15000 (ROXANA VMP 2013).GPJ URSSTLEV.GDT 3/1/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**VMP-54** 

Starting Date: 12/14/12
Completion Date: 12/14/12
Casing Elevation: Not Installed
Ground Elevation: 433.65

Quadrangle
Sec:34 (SE 1/4 of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):792230.14
E: (Y):2321840.44

| Depth In feet | Construction: VMP-54-30 | Construction: VMP-54-20 | Construction: VMP-54-10 | Construction: VMP-54-5 | Inches Driven | Inches Recovered | PID (ppm) | Graphic | Sampler Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | | | | | 60 | 48 | 1.1 | | | SP | Same: Medium dense, moist, brown, medium to coarse grained SAND (SP) | Sampled VMP-54-25 for VOC at 0920 |
| | | | | | 36 | 30 | 0.9<br>1.0 | | | | | |
| 35 | | | | | | | | | | | Bottom of boring at 31 ft. bgs | Sampled VMP-54-31 for VOC at 0926 |
| 40 | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | |

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **E. Arthur, W. Pennington**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: NE ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

Geoprobe
Air Knife/Hand Auger Sampler
Air Rotary
Sonic
Splitspoon Sampler
Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +4 WELLS 21562850.15000 (ROXANA VMP 2013).GPJ URSSTLEV.GDT 3/1/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

## VMP-55



Starting Date: 12/17/12
Completion Date: 12/17/12
Casing Elevation: Not Installed
Ground Elevation: 430.55

Quadrangle
Sec:34 (SE 1/4 of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):791879.41
E: (Y):2321828.60

| Depth In feet | Construction: VMP-55-30 | Construction: VMP-55-20 | Construction: VMP-55-10 | Construction: VMP-55-5 | Inches Driven | Inches Recovered | PID (ppm) | Graphic | Sampler Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | 0.0 | | | TOPSOIL | Topsoil | Air knifed to 10' bgs to clear utilities. |
| | | | | | | | 0.0 | | | FILL | Sand and gravel, asphalt rubble (FILL) | |
| | | | | | | | 0.2 | | | | | |
| | | | | | | | 0.3 | | | | | |
| 5 | | | | | | | 74.9 | | | | | |
| | | | | | | | 66.2 | | | | | |
| | | | | | | | 58.4 | | | | Becomes stiff, moist, dark gray clay, some sand and gravel asphalt | |
| | | | | | | | 33.1 | | | | | |
| | | | | | | | 48.2 | | | | | |
| 10 | | | | | 36 | 36 | 0.0 | | | | | |
| | | | | | | | 0.1 | | | | | |
| | | | | | 60 | 60 | 0.0 | | | CL | Stiff, moist, gray, low plastic CLAY (CL), with brown mottles | Sampled VMP-55-13 for VOC at 1310 |
| 15 | | | | | | | 0.0 | | | | | |
| | | | | | | | 0.0 | | | | | |
| | | | | | 60 | 60 | 0.0 | | | | | |
| 20 | | | | | | | 0.0 | | | | | |
| | | | | | | | 0.0 | | | | Becomes sandy | |
| | | | | | | | 1.0 | | | | | |
| | | | | | | | 2.1 | | | SP | Loose, moist, brown, medium grained SAND (SP)<br>2" clay seam | |

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **W. Pennington, J. Staetter**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 28 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

- Geoprobe
- Air Knife/Hand Auger Sampler
- Air Rotary
- Sonic
- Splitspoon Sampler
- Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +4 WELLS 21562850.15000 (ROXANA VMP 2013).GPJ URSSTLEV.GDT 3/1/13

# LOG OF BORING AND WELL CONSTRUCTION DETAIL

**VMP-55** 

Starting Date: 12/17/12
Completion Date: 12/17/12
Casing Elevation: Not Installed
Ground Elevation: 430.55

Quadrangle
Sec:34 (SE 1/4 of NE 1/4)
T:5N
R:9W
UTM (or State Plane) Coord
N: (X):791879.41
E: (Y):2321828.60

| Depth In feet | Construction: VMP-55-30 | Construction: VMP-55-20 | Construction: VMP-55-10 | Construction: VMP-55-5 | Inches Driven | Inches Recovered | PID (ppm) | Graphic | Sampler Symbol | USCS | DESCRIPTION | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 30 | | | | | 60 | 42 | 0.2 | | | SP | Same: Loose, moist, brown, medium grained SAND (SP)<br>0.5" clay seam | Sampled VMP-55-25 for VOC at 1315 |
| | | | | | 36 | 26 | 32.1<br>128.9 | | | | ▽ Becomes wet | |
| 35 | | | | | | | | | | | Bottom of boring at 31 ft. bgs | Sampled VMP-55-31 for VOC at 1320 |
| 40 | | | | | | | | | | | | |
| 45 | | | | | | | | | | | | |

Completion Depth: **31.0 Ft bgs**
Project No.: **21562850.15000**
Project Name: **Roxana Vapor Monitoring Point Drilling**
Drilling Contractor: **Roberts Enviromental Drilling, Inc.**
Driller Name: **P. Seymour**
Drilling Method: **Direct Push**
Drill Rig Type: **8040 DT**
Logged by: **W. Pennington, J. Staetter**
County: **Madison**
Site ID No.: **1191150002**
Federal ID No.: **ILD 080 012 305**

Water Depth: 28 ft., After ATD hrs.
Water Depth: _____ ft., After _____ hrs.
▽ Water level at time of drilling
▼ Water level after drilling
ATD - At time of drilling
NE - None Encountered
NA - Not Applicable

- Geoprobe
- Air Knife/Hand Auger Sampler
- Air Rotary
- Sonic
- Splitspoon Sampler
- Hollow Stem Auger-Soil samples not collected

URS

USC based on field visual observations

URS (EVIRON) LOG (EPA FORMAT) +4 WELLS 21562850.15000 (ROXANA VMP 2013).GPJ URSSTLEV.GDT 3/1/13

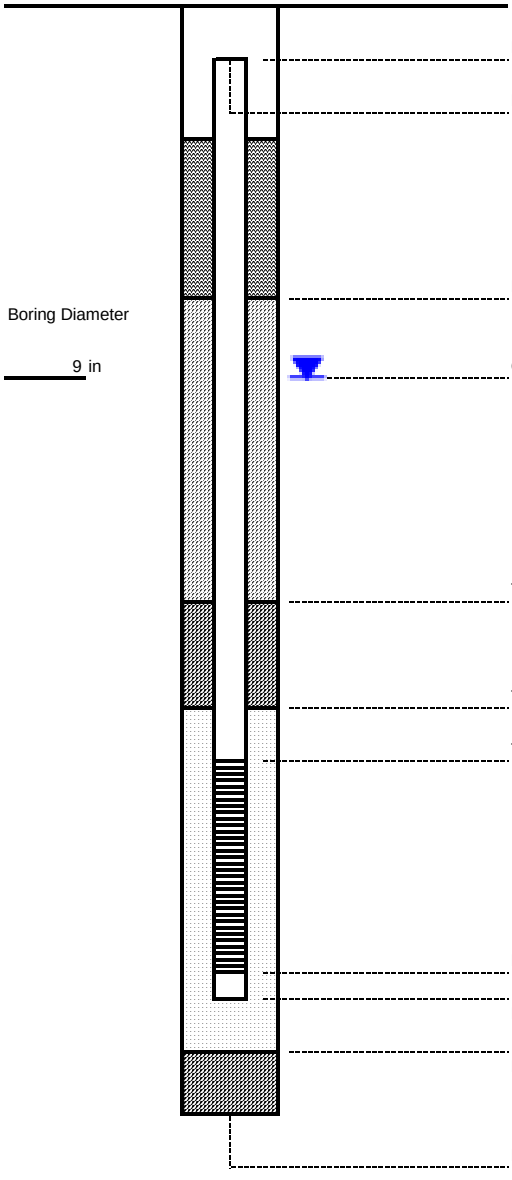
# APPENDIX B

## Groundwater Monitoring Well and Vapor Monitoring Point Construction Diagrams

# Monitoring Well Installation Details
## Flush Mount Monitoring Well Construction Diagram

URS Corporation

| | | | | | |
|---|---|---|---|---|---|
| Project: | Roxana Monitoring Well Drilling and Installation | | | Well ID: | MW-16 |
| Project Location: | Roxana, Illinois | Date Started: | 12/4/2012 | | |
| Well Location: | On East 5th St about 1/2-way between Chaffer Ave and the N-S alley | Date Completed: | 12/5/2012 | Boring ID: | MW-16 |
| Drilling Contractor: | Roberts Environmental Drilling, Inc. | Time Seal Set: | 0923 | Northing: | 792976.78 |
| Driller: | P. Seymour | Type of Rig: | 8040 DT | Easting: | 2322031.87 |
| Consulting Firm: | URS Corporation | Drilling Method: | HSA (4.25" ID) | Elevation Datum: | 443.76 |
| Geologist: | W. Pennington | Owner: | Equilon Enterprises LLC d/b/a Shell Oil Products US | Township, Range, Section: | T5N, R9W, Section 34 (E-central portion of NE 1/4) |



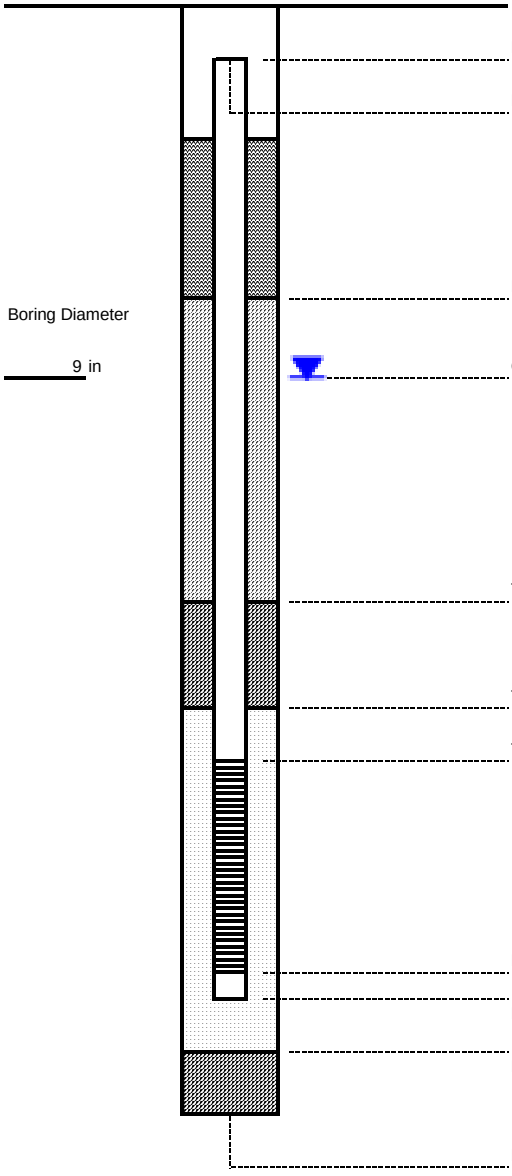

| | Depths (ft bgs) | Elevations (ft) |
|---|---|---|
| Ground Elevation: | | 443.76 |
| Depth of Riser Below Ground: | 0.37 | |
| Elevation of Top of Riser Pipe: | 0.37 | 443.39 |
| ID/Type of Surface Casing: | 8" Flush Mount | |
| Type of Surface Seal: | Concrete | |
| Bottom of Surface Seal: | 2.00 | 441.76 |
| Groundwater (after completion): | 43.12 | 400.64 |
| Type of Riser Pipe: | Schedule 40 PVC | |
| Riser Diameter: | 2.00 in | |
| Type of Backfill: | Cement/Bentonite Grout | |
| Top of Seal: | 32.43 | 411.33 |
| Type of Seal: | Bentonite Chips | |
| Top of Filter Pack | 35.43 | 408.33 |
| Top of Screen | 37.43 | 406.33 |
| Type of Filter Pack: | ANSI/NSF Quartz Sand | |
| Type of Screen: | Schedule 40 PVC | |
| Screen Diameter | 2.00 in | |
| Screen Slot Size: | 0.010 in | |
| Bottom of Screen: | 47.43 | 396.33 |
| Bottom of Blank Casing: | 47.68 | 396.08 |
| Backfill/Seal Below Well: | 47.68 | 396.08 |
| Type of Backfill/Seal Below Well: | Native soil (cave in) and placed ANSI/NSF Quartz Sand | |
| Bottom of Boring: | 49.00 | 394.76 |

DIAGRAM IS NOT TO SCALE

# Monitoring Well Installation Details
## Flush Mount Monitoring Well Construction Diagram

URS Corporation

| | | | | | |
|---|---|---|---|---|---|
| Project: | Roxana Monitoring Well Drilling and Installation | | | Well ID: | MW-17 |
| Project Location: | Roxana, Illinois | Date Started: | 11/26/2012 | | |
| Well Location: | On Chaffer Ave just north of East 4th St | Date Completed: | 11/26/2012 | Boring ID: | MW-17 |
| Drilling Contractor: | Roberts Environmental Drilling, Inc. | Time Seal Set: | 1420 | Northing: | 793347.04 |
| Driller: | P. Seymour | Type of Rig: | 8040 DT | Easting: | 2322247.29 |
| Consulting Firm: | URS Corporation | Drilling Method: | HSA (4.25" ID) | Elevation Datum: | 441.83 |
| Geologist: | W. Pennington | Owner: | Equilon Enterprises LLC d/b/a Shell Oil Products US | Township, Range, Section: | T5N, R9W, Section 34 (NE1/4 of NE 1/4) |



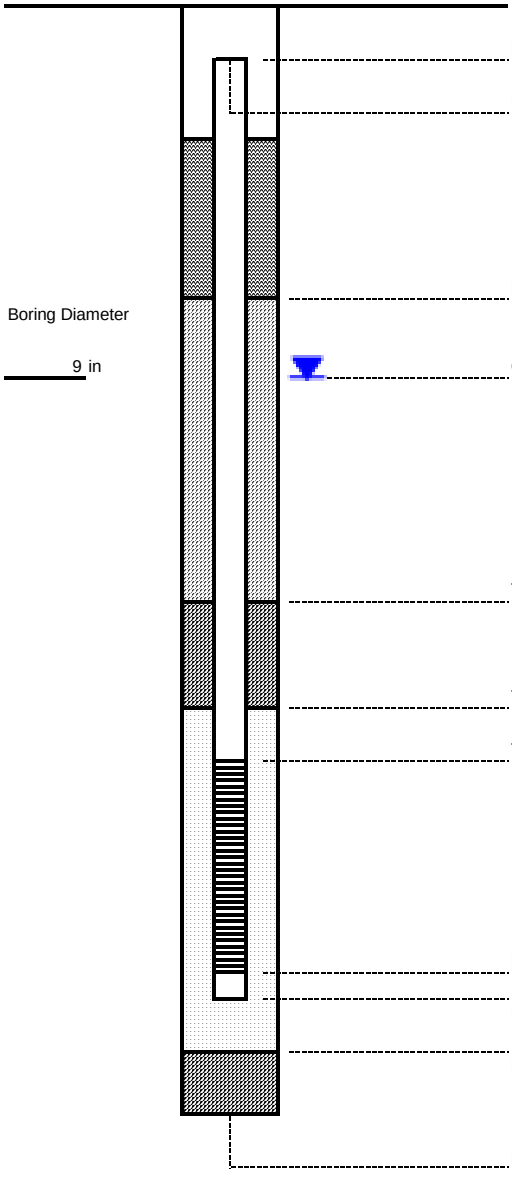

| | Depths (ft bgs) | Elevations (ft) |
|---|---|---|
| Ground Elevation: | | 441.83 |
| Depth of Riser Below Ground: | 0.26 | |
| Elevation of Top of Riser Pipe: | 0.26 | 441.57 |
| ID/Type of Surface Casing: | 8" Flush Mount | |
| Type of Surface Seal: | Concrete | |
| Bottom of Surface Seal: | 2.00 | 439.83 |
| Groundwater (after completion): | 41.89 | 399.94 |
| Type of Riser Pipe: | Schedule 40 PVC | |
| Riser Diameter: | 2.00 in | |
| Type of Backfill: | Cement/Bentonite Grout | |
| Top of Seal: | 29.55 | 412.28 |
| Type of Seal: | Bentonite Chips | |
| Top of Filter Pack | 32.55 | 409.28 |
| Top of Screen | 34.55 | 407.28 |
| Type of Filter Pack: | ANSI/NSF Quartz Sand | |
| Type of Screen: | Schedule 40 PVC | |
| Screen Diameter | 2.00 in | |
| Screen Slot Size: | 0.010 in | |
| Bottom of Screen: | 49.55 | 392.28 |
| Bottom of Blank Casing: | 49.80 | 392.03 |
| Backfill/Seal Below Well: | 49.80 | 392.03 |
| Type of Backfill/Seal Below Well: | Native soil (cave in) and placed ANSI/NSF Quartz Sand | |
| Bottom of Boring: | 50.00 | 391.83 |

DIAGRAM IS NOT TO SCALE

# Monitoring Well Installation Details
## Flush Mount Monitoring Well Construction Diagram

URS Corporation

| | | | | | |
|---|---|---|---|---|---|
| Project: | Roxana Monitoring Well Drilling and Installation | | | Well ID: | MW-18 |
| Project Location: | Roxana, Illinois | Date Started: | 11/28/2012 | | |
| Well Location: | On Chaffer Ave just north of alley between East 4th and East 5th Sts | Date Completed: | 11/29/2012 | Boring ID: | MW-18 |
| Drilling Contractor: | Roberts Environmental Drilling, Inc. | Time Seal Set: | 1005 | Northing: | 793161.68 |
| Driller: | P. Seymour | Type of Rig: | 8040 DT | Easting: | 2322252.27 |
| Consulting Firm: | URS Corporation | Drilling Method: | HSA (4.25" ID) | Elevation Datum: | 442.37 |
| Geologist: | W. Pennington | Owner: | Equilon Enterprises LLC d/b/a Shell Oil Products US | Township, Range, Section: | T5N, R9W, Section 34 (NE1/4 of NE 1/4) |



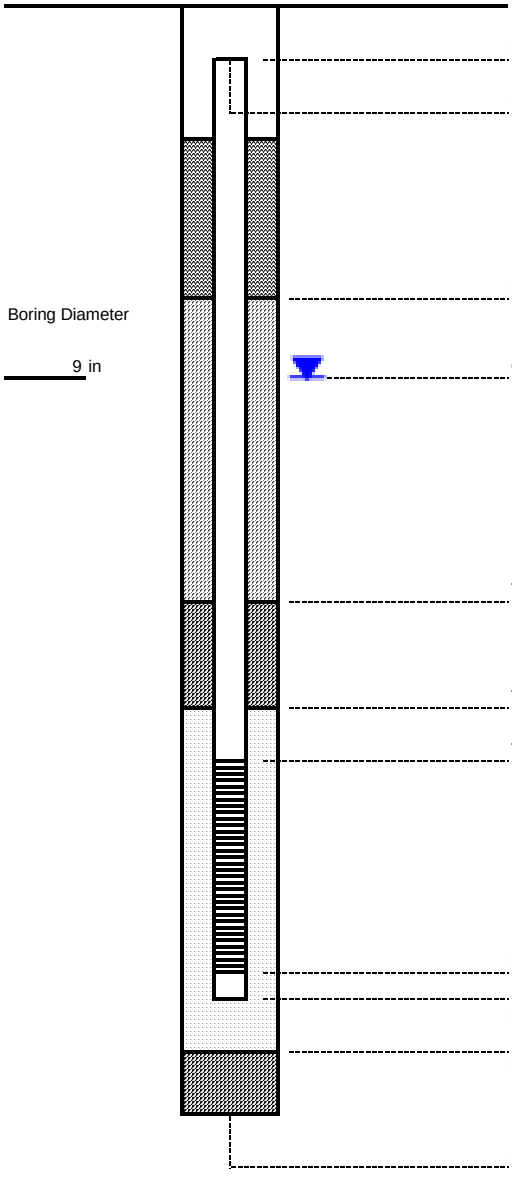
| | Depths (ft bgs) | Elevations (ft) |
|---|---|---|
| Ground Elevation: | | 442.37 |
| Depth of Riser Below Ground: | 0.33 | |
| Elevation of Top of Riser Pipe: | 0.33 | 442.04 |
| ID/Type of Surface Casing: | 8" Flush Mount | |
| Type of Surface Seal: | Concrete | |
| Bottom of Surface Seal: | 2.00 | 440.37 |
| Boring Diameter: 9 in | | |
| Groundwater (after completion): | 42.04 | 400.33 |
| Type of Riser Pipe: | Schedule 40 PVC | |
| Riser Diameter: | 2.00 in | |
| Type of Backfill: | Cement/Bentonite Grout | |
| Top of Seal: | 29.25 | 413.12 |
| Type of Seal: | Bentonite Chips | |
| Top of Filter Pack | 33.25 | 409.12 |
| Top of Screen | 35.25 | 407.12 |
| Type of Filter Pack: | ANSI/NSF Quartz Sand | |
| Type of Screen: | Schedule 40 PVC | |
| Screen Diameter | 2.00 in | |
| Screen Slot Size: | 0.010 in | |
| Bottom of Screen: | 50.25 | 392.12 |
| Bottom of Blank Casing: | 50.50 | 391.87 |
| Backfill/Seal Below Well: | 50.50 | 391.87 |
| Type of Backfill/Seal Below Well: | Native soil (cave in) and placed ANSI/NSF Quartz Sand | |
| Bottom of Boring: | 52.00 | 390.37 |

DIAGRAM IS NOT TO SCALE

# Monitoring Well Installation Details
## Flush Mount Monitoring Well Construction Diagram

URS Corporation

| | | | | | |
|---|---|---|---|---|---|
| Project: | Roxana Monitoring Well Drilling and Installation | | | Well ID: | MW-19 |
| Project Location: | Roxana, Illinois | Date Started: | 12/3/2012 | | |
| Well Location: | On Chaffer Ave just north of East 5th St | Date Completed: | 12/4/2012 | Boring ID: | MW-19 |
| Drilling Contractor: | Roberts Environmental Drilling, Inc. | Time Seal Set: | 0930 | Northing: | 793022.82 |
| Driller: | P. Seymour | Type of Rig: | 8040 DT | Easting: | 2322256.05 |
| Consulting Firm: | URS Corporation | Drilling Method: | HSA (4.25" ID) | Elevation Datum: | 443.13 |
| Geologist: | W. Pennington | Owner: | Equilon Enterprises LLC d/b/a Shell Oil Products US | Township, Range, Section: | T5N, R9W, Section 34 (E-central portion of NE 1/4) |



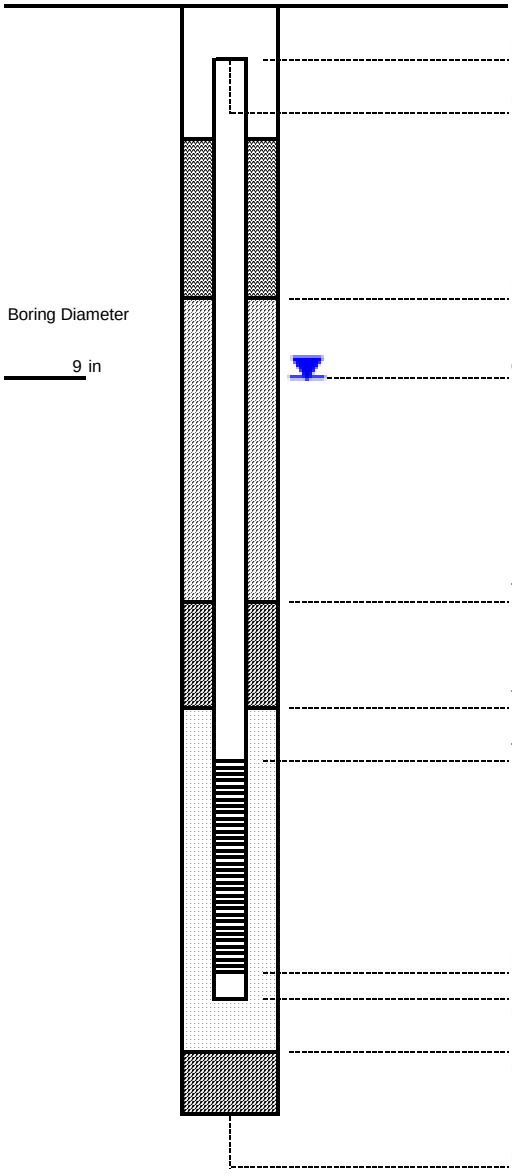
| | Depths (ft bgs) | Elevations (ft) |
|---|---|---|
| Ground Elevation: | | 443.13 |
| Depth of Riser Below Ground: | 0.36 | |
| Elevation of Top of Riser Pipe: | 0.36 | 442.77 |
| ID/Type of Surface Casing: | 8" Flush Mount | |
| Type of Surface Seal: | Concrete | |
| Bottom of Surface Seal: | 2.00 | 441.13 |
| Boring Diameter: 9 in | | |
| Groundwater (after completion): | 42.53 | 400.60 |
| Type of Riser Pipe: | Schedule 40 PVC | |
| Riser Diameter: | 2.00 in | |
| Type of Backfill: | Cement/Bentonite Grout | |
| Top of Seal: | 31.70 | 411.43 |
| Type of Seal: | Bentonite Chips | |
| Top of Filter Pack | 34.70 | 408.43 |
| Top of Screen | 36.70 | 406.43 |
| Type of Filter Pack: | ANSI/NSF Quartz Sand | |
| Type of Screen: | Schedule 40 PVC | |
| Screen Diameter | 2.00 in | |
| Screen Slot Size: | 0.010 in | |
| Bottom of Screen: | 51.70 | 391.43 |
| Bottom of Blank Casing: | 51.95 | 391.18 |
| Backfill/Seal Below Well: | 51.95 | 391.18 |
| Type of Backfill/Seal Below Well: | Native soil (cave in) and placed ANSI/NSF Quartz Sand | |
| Bottom of Boring: | 53.00 | 390.13 |

DIAGRAM IS NOT TO SCALE

# Monitoring Well Installation Details
## Flush Mount Monitoring Well Construction Diagram

URS Corporation

| | | | | | |
|---|---|---|---|---|---|
| Project: | Roxana Monitoring Well Drilling and Installation | | | Well ID: | MW-20 |
| Project Location: | Roxana, Illinois | Date Started: | 12/5/2012 | | |
| Well Location: | On Chaffer Ave just south of alley between East 5th and East 6th Sts. | Date Completed: | 12/6/2012 | Boring ID: | MW-20 |
| Drilling Contractor: | Roberts Environmental Drilling, Inc. | Time Seal Set: | 1510 | Northing: | 792820.76 |
| Driller: | P. Seymour | Type of Rig: | 8040 DT | Easting: | 2322261.01 |
| Consulting Firm: | URS Corporation | Drilling Method: | HSA (4.25" ID) | Elevation Datum: | 444.02 |
| Geologist: | W. Pennington | Owner: | Equilon Enterprises LLC d/b/a Shell Oil Products US | Township, Range, Section: | T5N, R9W, Section 34 (SE 1/4 of NE 1/4) |



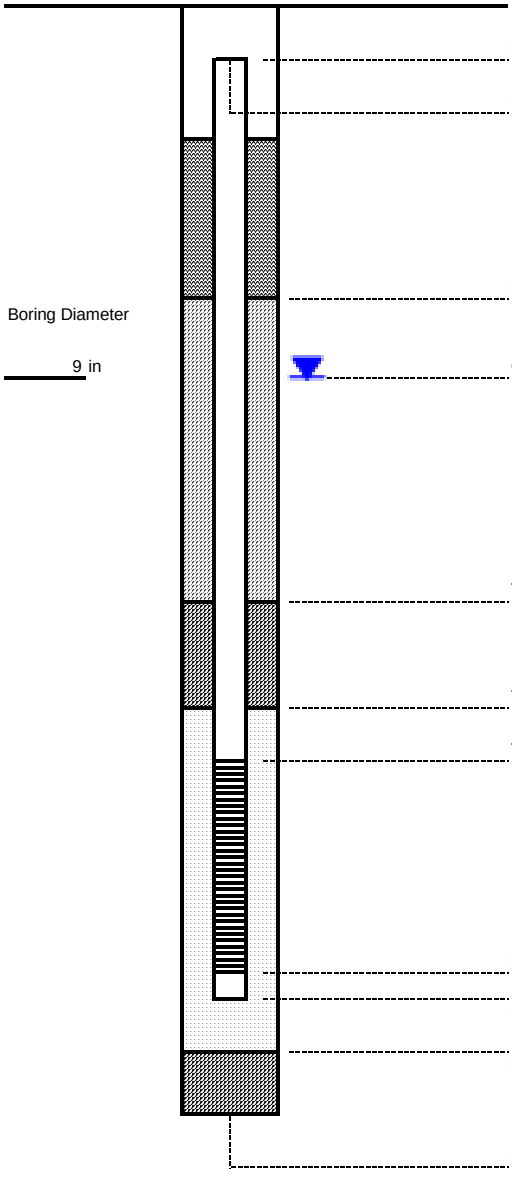

| | Depths (ft bgs) | Elevations (ft) |
|---|---|---|
| Ground Elevation: | | 444.02 |
| Depth of Riser Below Ground: | 0.35 | |
| Elevation of Top of Riser Pipe: | 0.35 | 443.67 |
| ID/Type of Surface Casing: | 8" Flush Mount | |
| Type of Surface Seal: | Concrete | |
| Bottom of Surface Seal: | 2.00 | 442.02 |
| Groundwater (after completion): | 43.32 | 400.70 |
| Type of Riser Pipe: | Schedule 40 PVC | |
| Riser Diameter: | 2.00 in | |
| Type of Backfill: | Cement/Bentonite Grout | |
| Top of Seal: | 31.23 | 412.79 |
| Type of Seal: | Bentonite Chips | |
| Top of Filter Pack | 34.23 | 409.79 |
| Top of Screen | 36.23 | 407.79 |
| Type of Filter Pack: | ANSI/NSF Quartz Sand | |
| Type of Screen: | Schedule 40 PVC | |
| Screen Diameter | 2.00 in | |
| Screen Slot Size: | 0.010 in | |
| Bottom of Screen: | 51.23 | 392.79 |
| Bottom of Blank Casing: | 51.48 | 392.54 |
| Backfill/Seal Below Well: | 51.48 | 392.54 |
| Type of Backfill/Seal Below Well: | Native soil (cave in) and placed ANSI/NSF Quartz Sand | |
| Bottom of Boring: | 53.00 | 391.02 |

DIAGRAM IS NOT TO SCALE

# Monitoring Well Installation Details
## Flush Mount Monitoring Well Construction Diagram

URS Corporation

| | | | | | |
|---|---|---|---|---|---|
| Project: | Roxana Monitoring Well Drilling and Installation | | | Well ID: | MW-21 |
| Project Location: | Roxana, Illinois | Date Started: | 12/6/2012 | | |
| Well Location: | On Chaffer Ave between East 7th St and the alley to the south | Date Completed: | 12/7/2012 | Boring ID: | MW-21 |
| Drilling Contractor: | Roberts Environmental Drilling, Inc. | Time Seal Set: | 1500 | Northing: | 792288.33 |
| Driller: | P. Seymour | Type of Rig: | 8040 DT | Easting: | 2322275.06 |
| Consulting Firm: | URS Corporation | Drilling Method: | HSA (4.25" ID) | Elevation Datum: | 444.10 |
| Geologist: | W. Pennington | Owner: | Equilon Enterprises LLC d/b/a Shell Oil Products US | Township, Range, Section: | T5N, R9W, Section 34 (SE 1/4 of NE 1/4) |



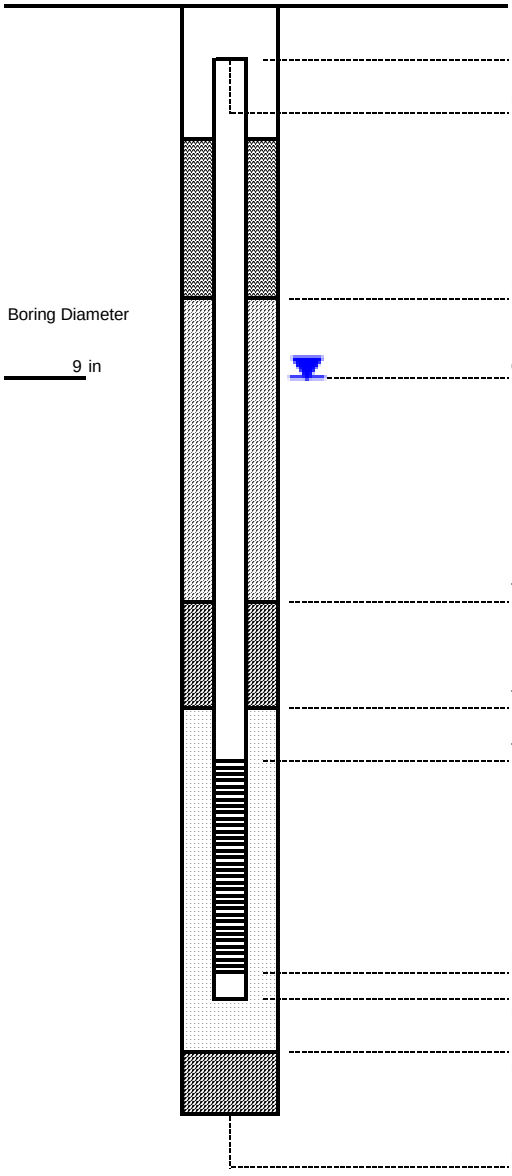

| | Depths (ft bgs) | Elevations (ft) |
|---|---|---|
| Ground Elevation: | | 444.10 |
| Depth of Riser Below Ground: | 0.29 | |
| Elevation of Top of Riser Pipe: | 0.29 | 443.81 |
| ID/Type of Surface Casing: | 8" Flush Mount | |
| Type of Surface Seal: | Concrete | |
| Bottom of Surface Seal: | 2.00 | 442.10 |
| Groundwater (after completion): | 43.15 | 400.95 |
| Type of Riser Pipe: | Schedule 40 PVC | |
| Riser Diameter: | 2.00 in | |
| Type of Backfill: | Cement/Bentonite Grout | |
| Top of Seal: | 30.30 | 413.80 |
| Type of Seal: | Bentonite Chips | |
| Top of Filter Pack | 33.30 | 410.80 |
| Top of Screen | 35.30 | 408.80 |
| Type of Filter Pack: | ANSI/NSF Quartz Sand | |
| Type of Screen: | Schedule 40 PVC | |
| Screen Diameter | 2.00 in | |
| Screen Slot Size: | 0.010 in | |
| Bottom of Screen: | 50.30 | 393.80 |
| Bottom of Blank Casing: | 50.55 | 393.55 |
| Backfill/Seal Below Well: | 50.55 | 393.55 |
| Type of Backfill/Seal Below Well: | Native soil (cave in) and placed ANSI/NSF Quartz Sand | |
| Bottom of Boring: | 52.00 | 392.10 |

DIAGRAM IS NOT TO SCALE

# Monitoring Well Installation Details
## Flush Mount Monitoring Well Construction Diagram

URS Corporation

| | | | | | |
|---|---|---|---|---|---|
| Project: | Roxana Monitoring Well Drilling and Installation | | | Well ID: | MW-22 |
| Project Location: | Roxana, Illinois | Date Started: | 11/29/2012 | | |
| Well Location: | On East 4th St about 1/2-way between Chaffer Ave and the N-S alley | Date Completed: | 11/30/2012 | Boring ID: | MW-22 |
| Drilling Contractor: | Roberts Environmental Drilling, Inc. | Time Seal Set: | 1200 | Northing: | 793281.59 |
| Driller: | P. Seymour | Type of Rig: | 8040 DT | Easting: | 2321996.63 |
| Consulting Firm: | URS Corporation | Drilling Method: | HSA (4.25" ID) | Elevation Datum: | 442.49 |
| Geologist: | W. Pennington | Owner: | Equilon Enterprises LLC d/b/a Shell Oil Products US | Township, Range, Section: | T5N, R9W, Section 34 (NE 1/4 of NE 1/4) |



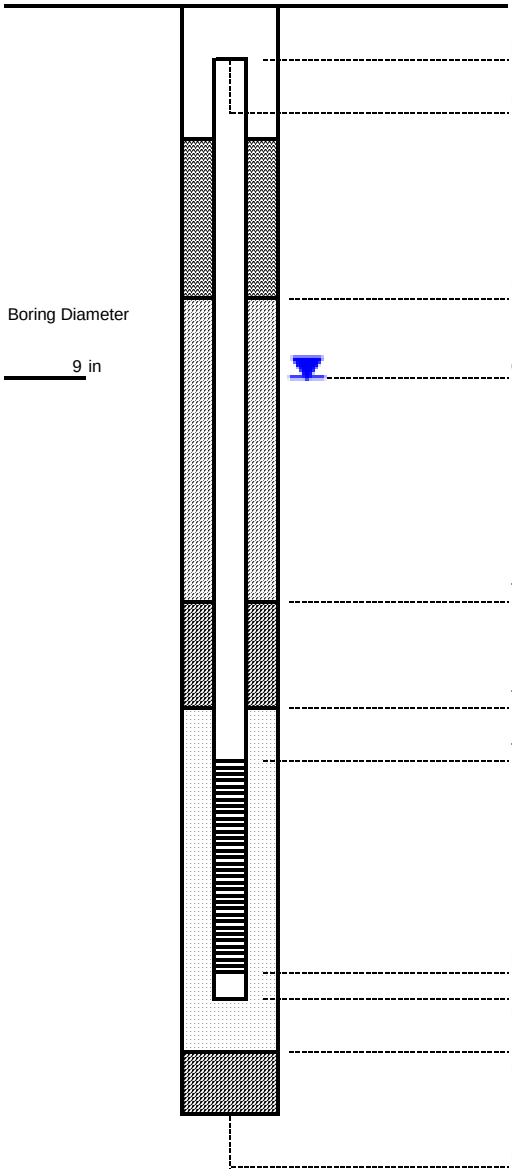

| | Depths (ft bgs) | Elevations (ft) |
|---|---|---|
| Ground Elevation: | | 442.49 |
| Depth of Riser Below Ground: | 0.33 | |
| Elevation of Top of Riser Pipe: | 0.33 | 442.16 |
| ID/Type of Surface Casing: | 8" Flush Mount | |
| Type of Surface Seal: | Concrete | |
| Bottom of Surface Seal: | 2.00 | 440.49 |
| Groundwater (after completion): | 41.30 | 401.19 |
| Type of Riser Pipe: | Schedule 40 PVC | |
| Riser Diameter: | 2.00 in | |
| Type of Backfill: | Cement/Bentonite Grout | |
| Top of Seal: | 33.21 | 409.28 |
| Type of Seal: | Bentonite Chips | |
| Top of Filter Pack | 36.21 | 406.28 |
| Top of Screen | 38.21 | 404.28 |
| Type of Filter Pack: | ANSI/NSF Quartz Sand | |
| Type of Screen: | Schedule 40 PVC | |
| Screen Diameter | 2.00 in | |
| Screen Slot Size: | 0.010 in | |
| Bottom of Screen: | 48.21 | 394.28 |
| Bottom of Blank Casing: | 48.46 | 394.03 |
| Backfill/Seal Below Well: | 48.46 | 394.03 |
| Type of Backfill/Seal Below Well: | Native soil (cave in) and placed ANSI/NSF Quartz Sand | |
| Bottom of Boring: | 50.00 | 392.49 |

DIAGRAM IS NOT TO SCALE

# Monitoring Well Installation Details
## Flush Mount Monitoring Well Construction Diagram

URS Corporation

| | | | | | |
|---|---|---|---|---|---|
| Project: | Roxana Monitoring Well Drilling and Installation | | | Well ID: | ROST-3-MW |
| Project Location: | Roxana, Illinois | Date Started: | 11/27/2012 | | (Replacement well for ROST-3-PZ) |
| Well Location: | East 3rd St - Replacement well for ROST-3-PZ to facilitate sampling | Date Completed: | 11/27/2012 | Boring ID: | ROST-3 |
| Drilling Contractor: | Roberts Environmental Drilling, Inc. | Time Seal Set: | 1330 | Northing: | 793594.6 |
| Driller: | P. Seymour | Type of Rig: | 8040 DT | Easting: | 2321943.19 |
| Consulting Firm: | URS Corporation | Drilling Method: | HSA (4.25" ID) | Elevation Datum: | 442.66 |
| Geologist: | M. Miller | Owner: | Equilon Enterprises LLC d/b/a Shell Oil Products US | Township, Range, Section: | T5N, R9W, Section 34 (NE 1/4 of NE 1/4) |




| | Depths (ft bgs) | Elevations (ft) |
|---|---|---|
| Ground Elevation: | | 442.66 |
| Depth of Riser Below Ground: | 0.37 | |
| Elevation of Top of Riser Pipe: | 0.37 | 442.29 |
| ID/Type of Surface Casing: | 8" Flush Mount | |
| Type of Surface Seal: | Concrete | |
| Bottom of Surface Seal: | 2.00 | 440.66 |
| Groundwater (after completion): | 41.68 | 400.98 |
| Type of Riser Pipe: | Schedule 40 PVC | |
| Riser Diameter: | 2.00 in | |
| Type of Backfill: | Cement/Bentonite Grout | |
| Top of Seal: | 33.18 | 409.48 |
| Type of Seal: | Bentonite Chips | |
| Top of Filter Pack | 36.18 | 406.48 |
| Top of Screen | 38.18 | 404.48 |
| Type of Filter Pack: | ANSI/NSF Quartz Sand | |
| Type of Screen: | Schedule 40 PVC | |
| Screen Diameter | 2.00 in | |
| Screen Slot Size: | 0.010 in | |
| Bottom of Screen: | 48.18 | 394.48 |
| Bottom of Blank Casing: | 48.43 | 394.23 |
| Backfill/Seal Below Well: | 48.43 | 394.23 |
| Type of Backfill/Seal Below Well: | Native soil (cave in) and placed ANSI/NSF Quartz Sand | |
| Bottom of Boring: | 50.00 | 392.66 |

DIAGRAM IS NOT TO SCALE

This form may be completed within Acrobat before printing.

# Illinois Environmental Protection Agency — Well Completion Report

Site Number: 1191150002 County: Madison

Site Name: Wood River Refinery - Roxana, IL Well #: P-55 (replacement well)

State Plane Coordinate: X 2322278.76 Y 793803.04 (or) Latitude: ° ' " Longitude: ° ' " Borehole #: P-55R

Surveyed by: Juneau Engineering & Surveying - Robert Brown, PLS IL Registration #: 35-3298

Drilling Contractor: Roberts Environmental Drilling, Inc Driller: P. Seymour

Consulting Firm: URS Corporation Geologist: W. Pennington

Drilling Method: Direct Push Drilling Fluid (Type): N/A

Logged By: W. Pennington Date Started: 1/10/13 Date Finished: 1/10/13

Report Form Completed By: W. Pennington Date: 1/31/13

## ANNULAR SPACE DETAILS

Type of Surface Seal: Concrete

Type of Annular Sealant: Cement/Bentonite Grout

Installation Method: Tremie

Setting Time: 1350

Type of Bentonite Seal - - Granular, Pellet, Slurry (Choose One)

Installation Method: Gravity Feed

Setting Time: 1315

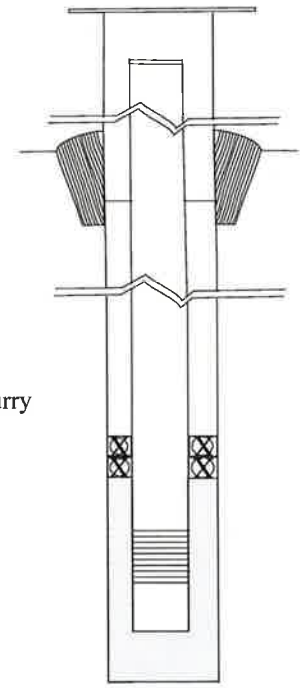
Type of Sand Pack: ANSI/NSF quartz sand

Grain Size: 61 grade (Sieve Size)

Installation Method: Gravity Feed

Type of Backfill Material: Native & Placed Sand (if applicable)

Installation Method: Gravity Feed



| Elevations (MSL)* | Depths (BGS) | (.01ft.) |
|---|---|---|
| 444.20 | 0 | Top of Protective Casing |
| 443.78 | 0.42 | Top of Riser Pipe |
| 444.20 | 0 | Ground Surface |
| 442.20 | 2.00 | Top of Annular Sealant |
| 401.16 | 43.04 | Static Water Level (After Completion) |
| 408.35 | 35.85 | Top of Seal |
| 405.35 | 38.85 | Top of Sand Pack |
| 403.35 | 40.85 | Top of Screen |
| 393.35 | 50.85 | Bottom of Screen |
| 393.10 | 51.10 | Bottom of Well |
| 391.20 | 53.00 | Bottom of Borehole |

* Referenced to a National Geodetic Datum

## WELL CONSTRUCTION MATERIAL

(Choose one type of material for each area)

| | |
|---|---|
| Protective Casing | SS304, SS316, PTFE, PVC, or Other |
| Riser Pipe Above W.T. | SS304, SS316, PTFE, PVC, or Other |
| Riser Pipe Below W.T. | SS304, SS316, PTFE, PVC, or Other |
| Screen | SS304, SS316, PTFE, PVC, or Other |

## CASING MEASURMENTS

| | |
|---|---|
| Diameter of Borehole (inches) | 4.5 |
| ID of Riser Pipe (inches) | 2 |
| Protective Casing Length (feet) | n/a |
| Riser Pipe Length (feet) | 40.43 |
| Bottom of Screen to End Cap (feet) | 0.25 |
| Screen Length (1st slot to last slot) (feet) | 10 |
| Total Length of Casing (feet) | 50.68 |
| Screen Slot Size ** | 0.010 in |

**Hand-Slotted Well Screens are Unacceptable

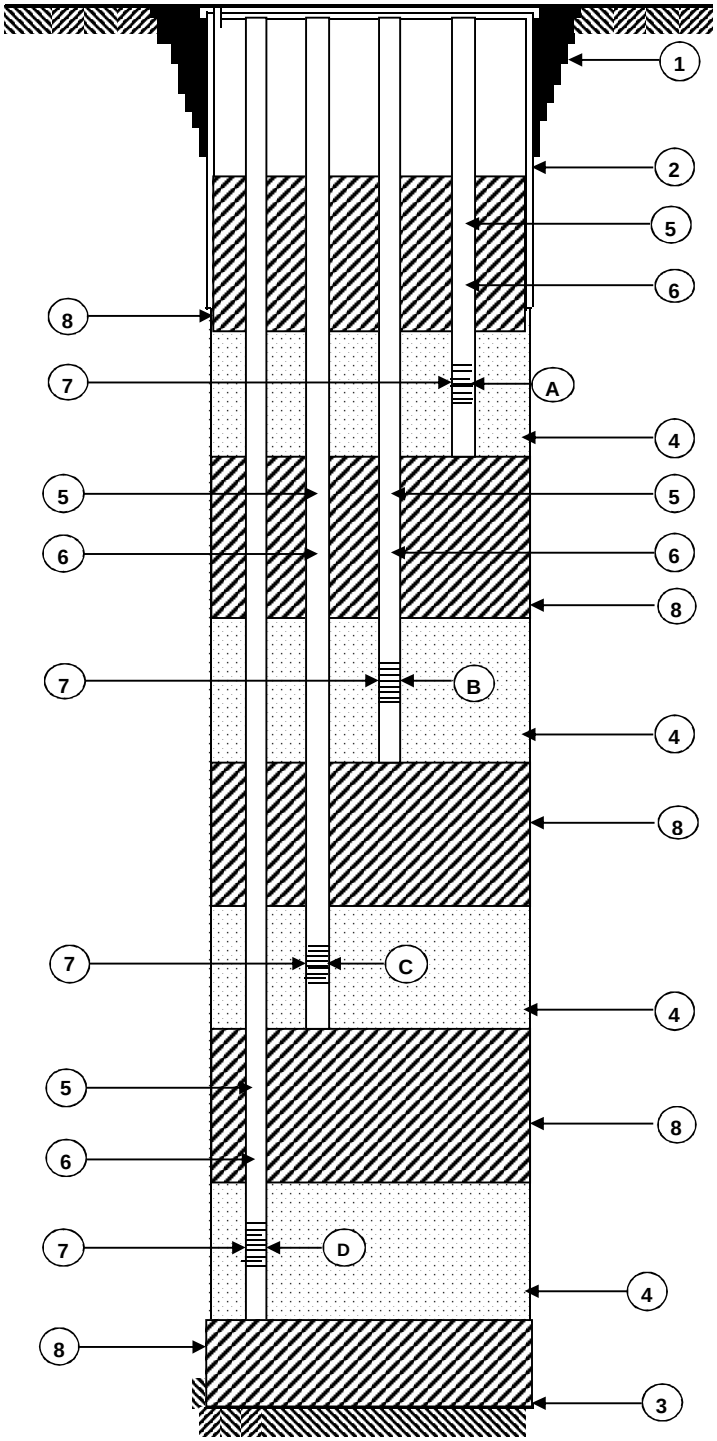
# VAPOR MONITORING POINT CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION (FEET) **445.57** JOB NUMBER **21562850**

TOP OF INNER WELL CASING ELEVATION **NA** BORING NUMBER **VMP-47**

DATUM **1988 USGS** INSTALLATION DATE **12/10/2012**

LOCATION **Roxana, Illinois - eastern end of alley north of East 2nd St**




## VAPOR MONITORING PORT INSTALLATION

| SCREEN | DEPTH TO BOTTOM OF SAND (FEET*) | DEPTH TO TOP OF SAND (FEET*) | DEPTH TO BOTTOM OF SCREEN (FEET*) | DEPTH TO TOP OF SCREEN (FEET*) | LENGTH OF SCREEN (FEET) | DIAMETER OF SCREEN (INCHES) | SLOT SIZE (INCHES) |
|---|---|---|---|---|---|---|---|
| **A** | 6.0 | 4.5 | 5.5 | 5.0 | 0.5 | 0.5 | 0.010 |
| **B** | 11.0 | 9.5 | 10.5 | 10.0 | 0.5 | 0.5 | 0.010 |
| **C** | 21.0 | 19.5 | 20.5 | 20.0 | 0.5 | 0.5 | 0.010 |
| **D** | 31.0 | 29.5 | 30.0 | 30.5 | 0.5 | 0.5 | 0.010 |

**1** CONCRETE CAP? [YES] NO (CIRCLE ONE)

**2** BOREHOLE DIAMETER _____ INCHES

**3** TOTAL DEPTH OF BOREHOLE 33.0 FEET*

**4** TYPE OF PACK AROUND SCREEN ANSI/NSF Quartz Sand

**5** RISER MATERIAL Stainless Steel

**6** RISER DIAMETER 0.125 INCHES

**7** SCREEN MATERIAL Stainless Steel

**8** TYPE OF SEAL Granular Bentonite

* (DEPTH FROM GROUND SURFACE)

NOTE: DRAWING NOT TO SCALE

URS Corporation

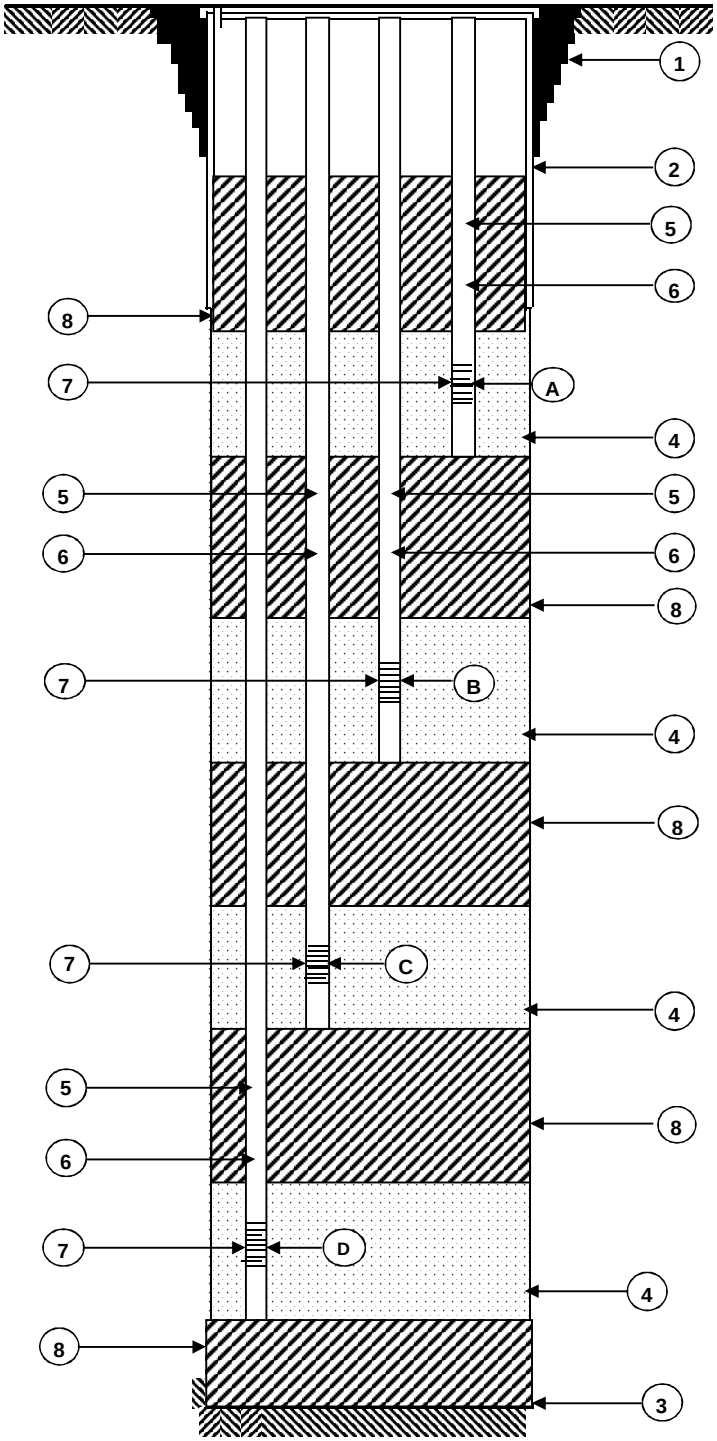
# VAPOR MONITORING POINT CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION (FEET) **443.72** JOB NUMBER **21562850**

TOP OF INNER WELL CASING ELEVATION **NA** BORING NUMBER **VMP-48**

DATUM **1988 USGS** INSTALLATION DATE **12/11/2012**

LOCATION **Roxana, Illinois - eastern end of alley north of East 3rd St**




## VAPOR MONITORING PORT INSTALLATION

| SCREEN | DEPTH TO BOTTOM OF SAND (FEET*) | DEPTH TO TOP OF SAND (FEET*) | DEPTH TO BOTTOM OF SCREEN (FEET*) | DEPTH TO TOP OF SCREEN (FEET*) | LENGTH OF SCREEN (FEET) | DIAMETER OF SCREEN (INCHES) | SLOT SIZE (INCHES) |
|---|---|---|---|---|---|---|---|
| **A** | 6.0 | 4.5 | 5.5 | 5.0 | 0.5 | 0.5 | 0.010 |
| **B** | 11.0 | 9.5 | 10.5 | 10.0 | 0.5 | 0.5 | 0.010 |
| **C** | 21.0 | 19.5 | 20.5 | 20.0 | 0.5 | 0.5 | 0.010 |
| **D** | 31.0 | 29.5 | 30.5 | 30.0 | 0.5 | 0.5 | 0.010 |

**1** CONCRETE CAP? [YES] NO (CIRCLE ONE)

**2** BOREHOLE DIAMETER _____ INCHES

**3** TOTAL DEPTH OF BOREHOLE 31.0 FEET*

**4** TYPE OF PACK AROUND SCREEN ANSI/NSF Quartz Sand

**5** RISER MATERIAL Stainless Steel

**6** RISER DIAMETER 0.125 INCHES

**7** SCREEN MATERIAL Stainless Steel

**8** TYPE OF SEAL Granular Bentonite

* (DEPTH FROM GROUND SURFACE)

NOTE: DRAWING NOT TO SCALE

URS Corporation

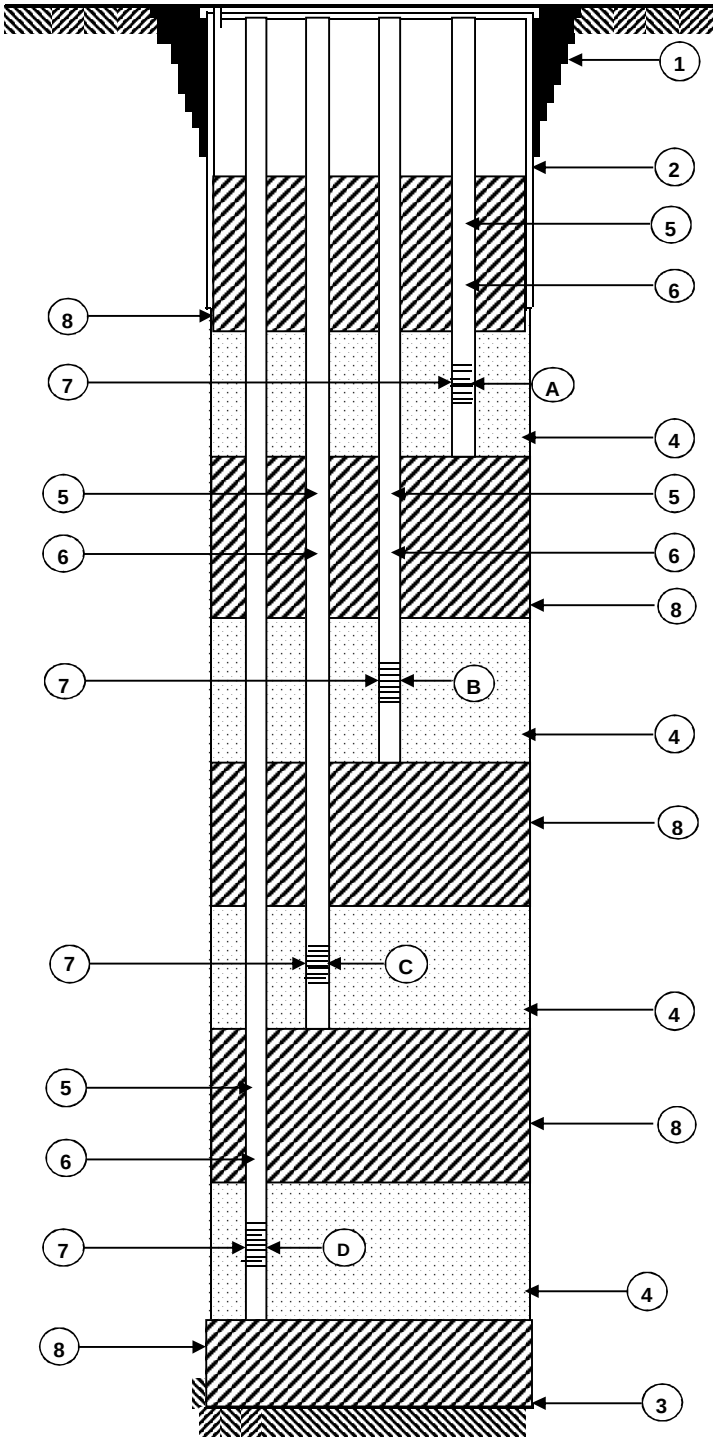
# VAPOR MONITORING POINT CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION (FEET) **442.35** JOB NUMBER **21562850**

TOP OF INNER WELL CASING ELEVATION **NA** BORING NUMBER **VMP-49**

DATUM **1988 USGS** INSTALLATION DATE **12/12/2012**

LOCATION **Roxana, Illinois - eastern end of alley north of East 4th St**




## VAPOR MONITORING PORT INSTALLATION

| SCREEN | DEPTH TO BOTTOM OF SAND (FEET*) | DEPTH TO TOP OF SAND (FEET*) | DEPTH TO BOTTOM OF SCREEN (FEET*) | DEPTH TO TOP OF SCREEN (FEET*) | LENGTH OF SCREEN (FEET) | DIAMETER OF SCREEN (INCHES) | SLOT SIZE (INCHES) |
|---|---|---|---|---|---|---|---|
| **A** | 6.0 | 4.5 | 5.5 | 5.0 | 0.5 | 0.5 | 0.010 |
| **B** | 11.0 | 9.5 | 10.5 | 10.0 | 0.5 | 0.5 | 0.010 |
| **C** | 21.0 | 19.5 | 20.5 | 20.0 | 0.5 | 0.5 | 0.010 |
| **D** | 31.0 | 29.5 | 30.5 | 30.0 | 0.5 | 0.5 | 0.010 |

**1** CONCRETE CAP? [YES] NO (CIRCLE ONE)

**2** BOREHOLE DIAMETER _____ INCHES

**3** TOTAL DEPTH OF BOREHOLE 31.0 FEET*

**4** TYPE OF PACK AROUND SCREEN ANSI/NSF Quartz Sand

**5** RISER MATERIAL Stainless Steel

**6** RISER DIAMETER 0.125 INCHES

**7** SCREEN MATERIAL Stainless Steel

**8** TYPE OF SEAL Granular Bentonite

* (DEPTH FROM GROUND SURFACE)

NOTES: 1) DRAWING NOT TO SCALE
2) VMP-3-22 was installed in an adjancent hole due to complications during installation.

URS Corporation

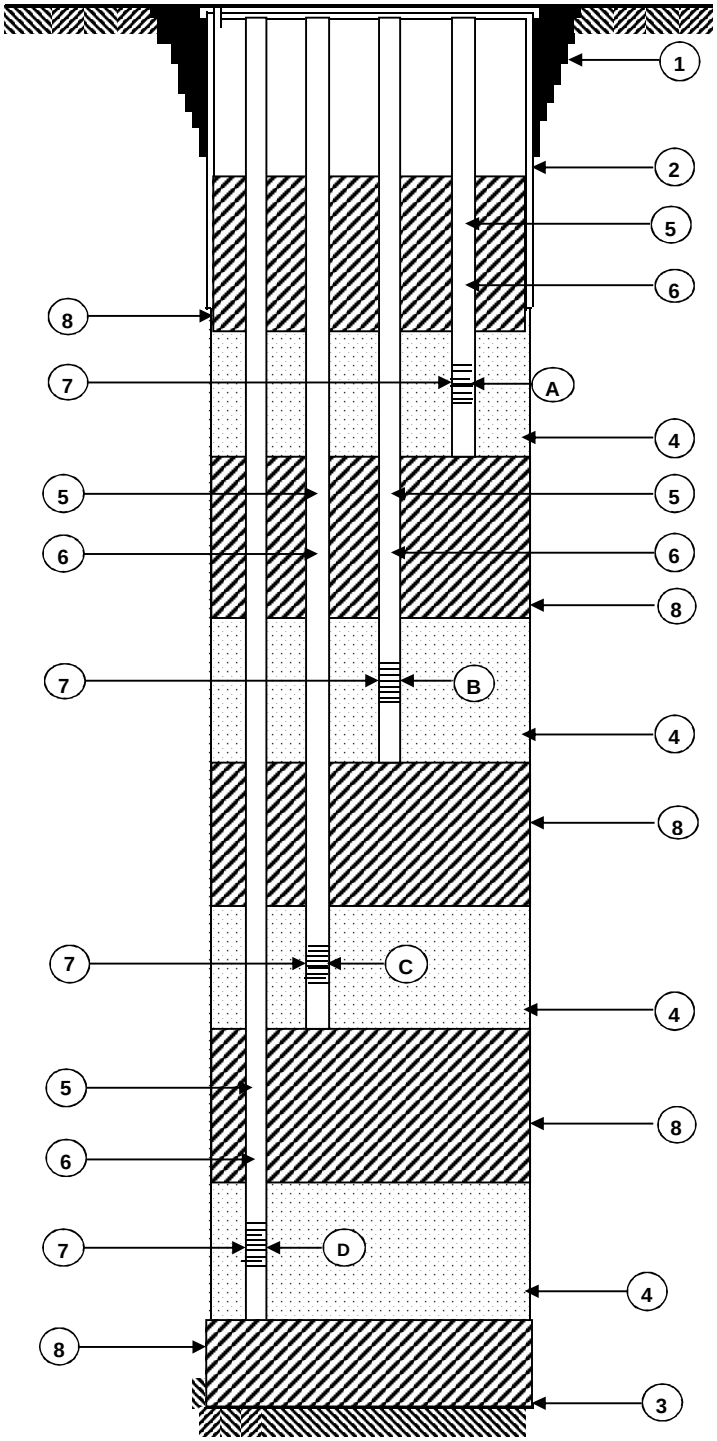
# VAPOR MONITORING POINT CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION (FEET) **443.83** JOB NUMBER **21562850**

TOP OF INNER WELL CASING ELEVATION **NA** BORING NUMBER **VMP-50**

DATUM **1988 USGS** INSTALLATION DATE **12/11/2012**

LOCATION **Roxana, Illinois - eastern end of alley north of East 5th St**




## VAPOR MONITORING PORT INSTALLATION

| SCREEN | DEPTH TO BOTTOM OF SAND (FEET*) | DEPTH TO TOP OF SAND (FEET*) | DEPTH TO BOTTOM OF SCREEN (FEET*) | DEPTH TO TOP OF SCREEN (FEET*) | LENGTH OF SCREEN (FEET) | DIAMETER OF SCREEN (INCHES) | SLOT SIZE (INCHES) |
|---|---|---|---|---|---|---|---|
| **A** | 6.0 | 4.5 | 5.5 | 5.0 | 0.5 | 0.5 | 0.010 |
| **B** | 11.0 | 9.5 | 10.5 | 10.0 | 0.5 | 0.5 | 0.010 |
| **C** | 21.0 | 19.5 | 20.5 | 20.0 | 0.5 | 0.5 | 0.010 |
| **D** | 31.0 | 29.5 | 30.5 | 30.0 | 0.5 | 0.5 | 0.010 |

**1** CONCRETE CAP? [YES] NO (CIRCLE ONE)

**2** BOREHOLE DIAMETER _____ INCHES

**3** TOTAL DEPTH OF BOREHOLE 31.0 FEET*

**4** TYPE OF PACK AROUND SCREEN ANSI/NSF Quartz Sand

**5** RISER MATERIAL Stainless Steel

**6** RISER DIAMETER 0.125 INCHES

**7** SCREEN MATERIAL Stainless Steel

**8** TYPE OF SEAL Granular Bentonite

* (DEPTH FROM GROUND SURFACE)

NOTE: DRAWING NOT TO SCALE

URS Corporation

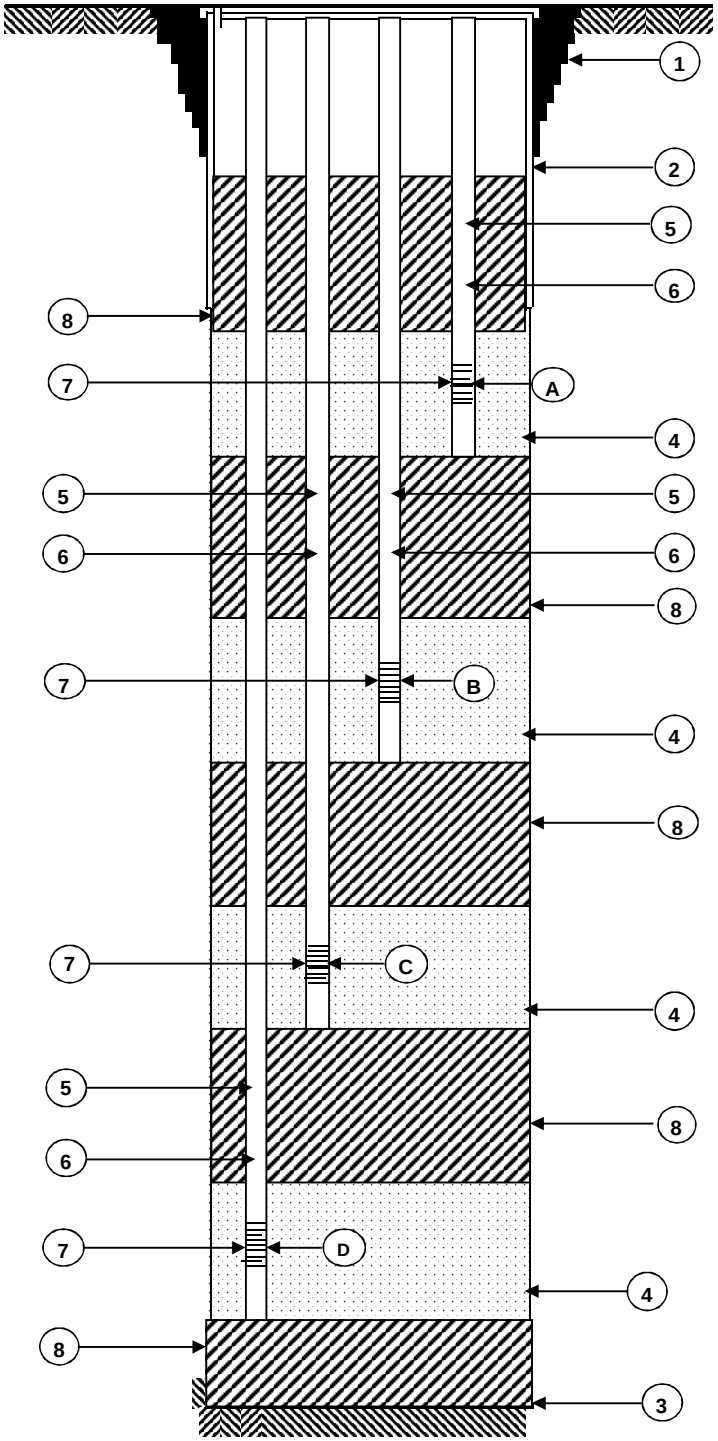
# VAPOR MONITORING POINT CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION (FEET) **444.27** JOB NUMBER **21562850**

TOP OF INNER WELL CASING ELEVATION **NA** BORING NUMBER **VMP-51**

DATUM **1988 USGS** INSTALLATION DATE **12/12/2012**

LOCATION **Roxana, Illinois - eastern end of alley north of East 6th St**




## VAPOR MONITORING PORT INSTALLATION

| SCREEN | DEPTH TO BOTTOM OF SAND (FEET*) | DEPTH TO TOP OF SAND (FEET*) | DEPTH TO BOTTOM OF SCREEN (FEET*) | DEPTH TO TOP OF SCREEN (FEET*) | LENGTH OF SCREEN (FEET) | DIAMETER OF SCREEN (INCHES) | SLOT SIZE (INCHES) |
|---|---|---|---|---|---|---|---|
| **A** | 6.0 | 4.5 | 5.5 | 5.0 | 0.5 | 0.5 | 0.010 |
| **B** | 11.0 | 9.5 | 10.5 | 10.0 | 0.5 | 0.5 | 0.010 |
| **C** | 21.0 | 19.5 | 20.5 | 20.0 | 0.5 | 0.5 | 0.010 |
| **D** | 31.0 | 29.5 | 30.5 | 30.0 | 0.5 | 0.5 | 0.010 |

**1** CONCRETE CAP? [YES] NO (CIRCLE ONE)

**2** BOREHOLE DIAMETER _____ INCHES

**3** TOTAL DEPTH OF BOREHOLE 31.0 FEET*

**4** TYPE OF PACK AROUND SCREEN ANSI/NSF Quartz Sand

**5** RISER MATERIAL Stainless Steel

**6** RISER DIAMETER 0.125 INCHES

**7** SCREEN MATERIAL Stainless Steel

**8** TYPE OF SEAL Granular Bentonite

* (DEPTH FROM GROUND SURFACE)

NOTE: DRAWING NOT TO SCALE

URS Corporation

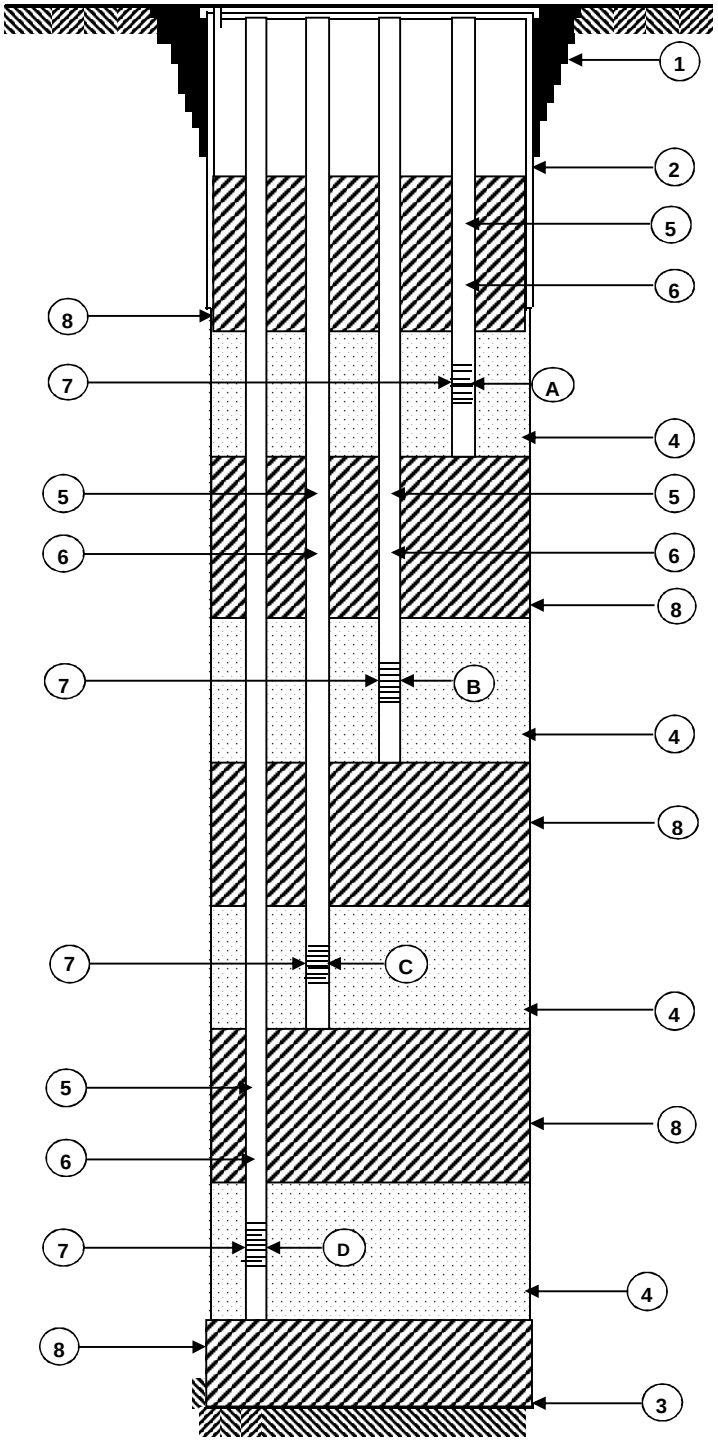
# VAPOR MONITORING POINT CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION (FEET) **443.73** JOB NUMBER **21562850**

TOP OF INNER WELL CASING ELEVATION **NA** BORING NUMBER **VMP-52**

DATUM **1988 USGS** INSTALLATION DATE **12/13/2012**

LOCATION **Roxana, Illinois - eastern end of alley north of East 7th St**




## VAPOR MONITORING PORT INSTALLATION

| SCREEN | DEPTH TO BOTTOM OF SAND (FEET*) | DEPTH TO TOP OF SAND (FEET*) | DEPTH TO BOTTOM OF SCREEN (FEET*) | DEPTH TO TOP OF SCREEN (FEET*) | LENGTH OF SCREEN (FEET) | DIAMETER OF SCREEN (INCHES) | SLOT SIZE (INCHES) |
|---|---|---|---|---|---|---|---|
| **A** | 6.0 | 4.5 | 5.5 | 5.0 | 0.5 | 0.5 | 0.010 |
| **B** | 11.0 | 9.5 | 10.5 | 10.0 | 0.5 | 0.5 | 0.010 |
| **C** | 21.0 | 19.5 | 20.5 | 20.0 | 0.5 | 0.5 | 0.010 |
| **D** | 31.0 | 29.5 | 30.5 | 30.0 | 0.5 | 0.5 | 0.010 |

**1** CONCRETE CAP? [YES] NO (CIRCLE ONE)

**2** BOREHOLE DIAMETER _____ INCHES

**3** TOTAL DEPTH OF BOREHOLE 31.0 FEET*

**4** TYPE OF PACK AROUND SCREEN ANSI/NSF Quartz Sand

**5** RISER MATERIAL Stainless Steel

**6** RISER DIAMETER 0.125 INCHES

**7** SCREEN MATERIAL Stainless Steel

**8** TYPE OF SEAL Granular Bentonite

* (DEPTH FROM GROUND SURFACE)

NOTE: DRAWING NOT TO SCALE

URS Corporation

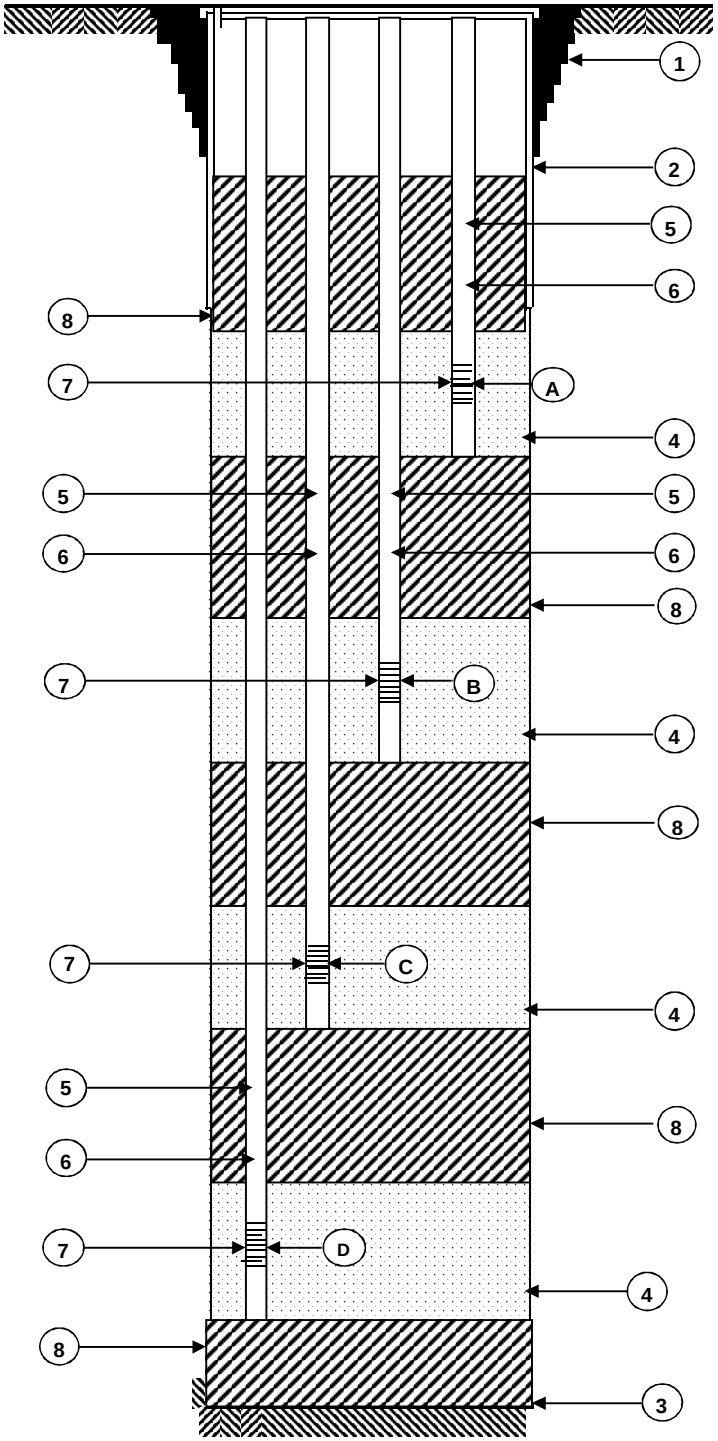
# VAPOR MONITORING POINT CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION (FEET) **443.55** JOB NUMBER **21562850**

TOP OF INNER WELL CASING ELEVATION **NA** BORING NUMBER **VMP-53**

DATUM **1988 USGS** INSTALLATION DATE **12/13/2012**

LOCATION **Roxana, Illinois - eastern end of alley north of East 8th St**




## VAPOR MONITORING PORT INSTALLATION

| SCREEN | DEPTH TO BOTTOM OF SAND (FEET*) | DEPTH TO TOP OF SAND (FEET*) | DEPTH TO BOTTOM OF SCREEN (FEET*) | DEPTH TO TOP OF SCREEN (FEET*) | LENGTH OF SCREEN (FEET) | DIAMETER OF SCREEN (INCHES) | SLOT SIZE (INCHES) |
|---|---|---|---|---|---|---|---|
| **A** | 6.0 | 4.5 | 5.5 | 5.0 | 0.5 | 0.5 | 0.010 |
| **B** | 11.0 | 9.5 | 10.5 | 10.0 | 0.5 | 0.5 | 0.010 |
| **C** | 21.0 | 19.5 | 20.5 | 20.0 | 0.5 | 0.5 | 0.010 |
| **D** | 31.0 | 29.5 | 30.5 | 30.0 | 0.5 | 0.5 | 0.010 |

**1** CONCRETE CAP? [YES] NO (CIRCLE ONE)

**2** BOREHOLE DIAMETER _____ INCHES

**3** TOTAL DEPTH OF BOREHOLE 31.0 FEET*

**4** TYPE OF PACK AROUND SCREEN ANSI/NSF Quartz Sand

**5** RISER MATERIAL Stainless Steel

**6** RISER DIAMETER 0.125 INCHES

**7** SCREEN MATERIAL Stainless Steel

**8** TYPE OF SEAL Granular Bentonite

* (DEPTH FROM GROUND SURFACE)

NOTE: DRAWING NOT TO SCALE

URS Corporation

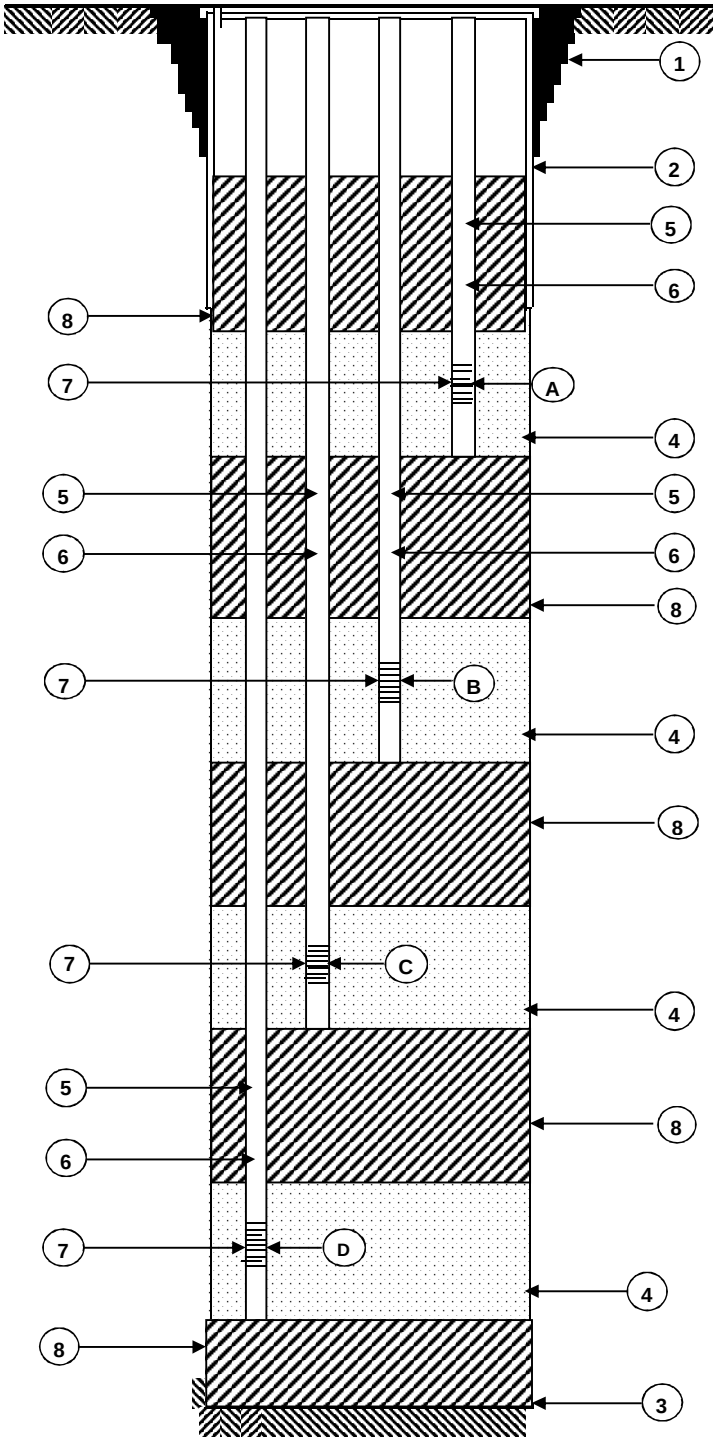
# VAPOR MONITORING POINT CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION (FEET) **433.65** JOB NUMBER **21562850**

TOP OF INNER WELL CASING ELEVATION **NA** BORING NUMBER **VMP-54**

DATUM **1988 USGS** INSTALLATION DATE **12/14/2012**

LOCATION **Roxana, Illinois - western end of alley north of East 8th St**




## VAPOR MONITORING PORT INSTALLATION

| SCREEN | DEPTH TO BOTTOM OF SAND (FEET*) | DEPTH TO TOP OF SAND (FEET*) | DEPTH TO BOTTOM OF SCREEN (FEET*) | DEPTH TO TOP OF SCREEN (FEET*) | LENGTH OF SCREEN (FEET) | DIAMETER OF SCREEN (INCHES) | SLOT SIZE (INCHES) |
|---|---|---|---|---|---|---|---|
| **A** | 6.0 | 4.5 | 5.5 | 5.0 | 0.5 | 0.5 | 0.010 |
| **B** | 11.0 | 9.5 | 10.5 | 10.0 | 0.5 | 0.5 | 0.010 |
| **C** | 21.0 | 19.5 | 20.5 | 20.0 | 0.5 | 0.5 | 0.010 |
| **D** | 31.0 | 29.5 | 30.5 | 30.0 | 0.5 | 0.5 | 0.010 |

**1** CONCRETE CAP? [YES] NO (CIRCLE ONE)

**2** BOREHOLE DIAMETER _____ INCHES

**3** TOTAL DEPTH OF BOREHOLE 31.0 FEET*

**4** TYPE OF PACK AROUND SCREEN ANSI/NSF Quartz Sand

**5** RISER MATERIAL Stainless Steel

**6** RISER DIAMETER 0.125 INCHES

**7** SCREEN MATERIAL Stainless Steel

**8** TYPE OF SEAL Granular Bentonite

* (DEPTH FROM GROUND SURFACE)

NOTE: DRAWING NOT TO SCALE

URS Corporation

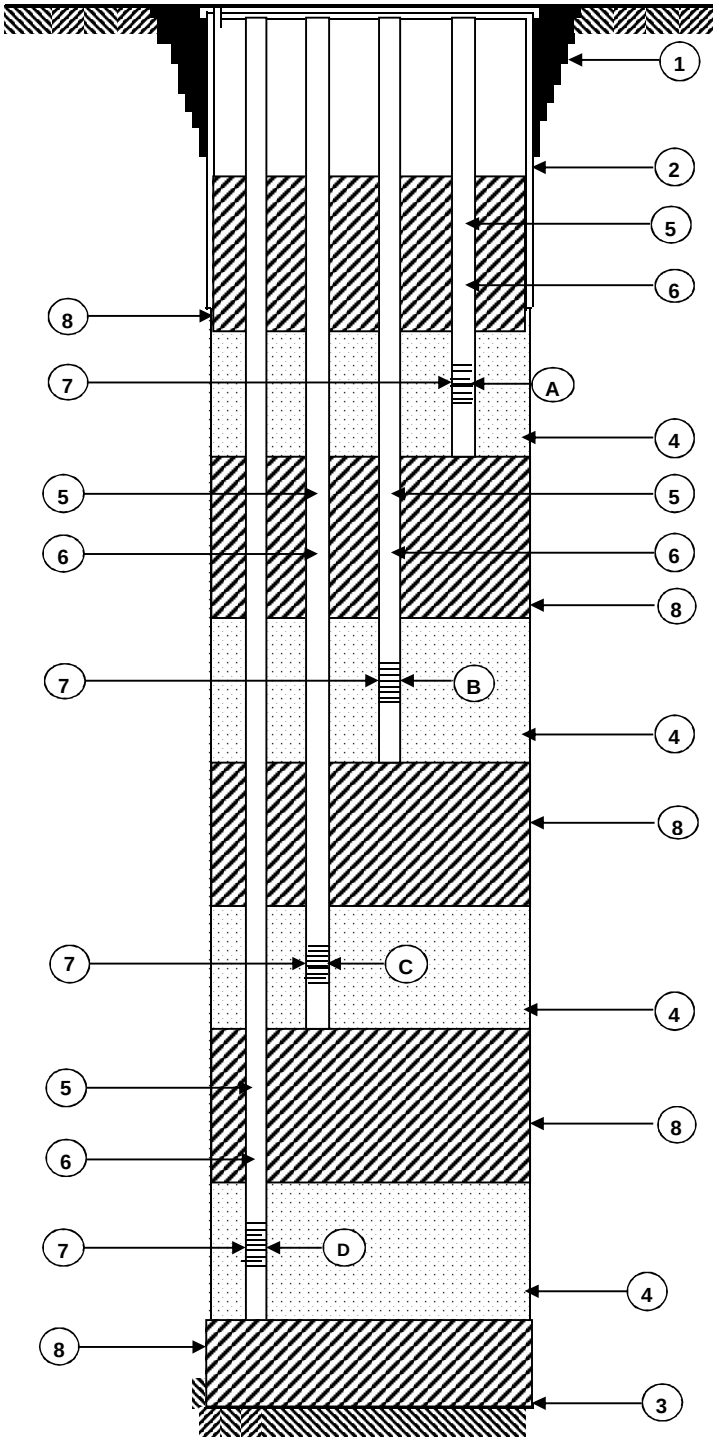
# VAPOR MONITORING POINT CONSTRUCTION DIAGRAM

GROUND SURFACE ELEVATION (FEET) **430.55** JOB NUMBER **21562850**

TOP OF INNER WELL CASING ELEVATION **NA** BORING NUMBER **VMP-55**

DATUM **1988 USGS** INSTALLATION DATE **12/17/2012**

LOCATION **Roxana, Illinois - grassy median west of frontage road and Public Works Yard**




## VAPOR MONITORING PORT INSTALLATION

| SCREEN | DEPTH TO BOTTOM OF SAND (FEET*) | DEPTH TO TOP OF SAND (FEET*) | DEPTH TO BOTTOM OF SCREEN (FEET*) | DEPTH TO TOP OF SCREEN (FEET*) | LENGTH OF SCREEN (FEET) | DIAMETER OF SCREEN (INCHES) | SLOT SIZE (INCHES) |
|---|---|---|---|---|---|---|---|
| **A** | 6.0 | 4.5 | 5.5 | 5.0 | 0.5 | 0.5 | 0.010 |
| **B** | 11.0 | 9.5 | 10.5 | 10.0 | 0.5 | 0.5 | 0.010 |
| **C** | 21.0 | 19.5 | 20.5 | 20.0 | 0.5 | 0.5 | 0.010 |
| **D** | 31.0 | 29.5 | 30.5 | 30.0 | 0.5 | 0.5 | 0.010 |

**1** CONCRETE CAP? [YES] NO (CIRCLE ONE)

**2** BOREHOLE DIAMETER _____ INCHES

**3** TOTAL DEPTH OF BOREHOLE 31.0 FEET*

**4** TYPE OF PACK AROUND SCREEN ANSI/NSF Quartz Sand

**5** RISER MATERIAL Stainless Steel

**6** RISER DIAMETER 0.125 INCHES

**7** SCREEN MATERIAL Stainless Steel

**8** TYPE OF SEAL Granular Bentonite

* (DEPTH FROM GROUND SURFACE)

NOTE: DRAWING NOT TO SCALE

URS Corporation

## GROUNDWATER DEVELOPMENT/SAMPLING DATA SHEET

PROJECT NAME: SOPUS - Roxana PROJECT NUMBER: 215628850.15000
DATE: 1-22-13
WEATHER: 10s - 20s, cloudy
FIELD PERSONNEL: T. Carrol, B. Hailemariam
MONITORING WELL ID: MW-16

### INITIAL DATA

Well Diameter: 2 in.
Total Depth of Well: 48 ft btoc
Depth to Water: 43.12 ft btoc
Height of Water Column: 4.88 ft
(0.163 gallons/ft for 2 inch well, 1.468 gallons/ft for 6-inch well)

Gallons/Lin.Ft: 0.163
Vol. Of Water Column: 0.8 gallons
Min. Purge Volume: 4 gallons (5 volumes)
Depth to Top of Screen: 38 ft btoc

Water Added during Drilling: 5 gallons
Water to be Removed: 25 gallons (5x added)
Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 0.0 ppm

### PURGE DATA

Purge Method: hurricane pump

Stabilized: +/- 0.2 +/- 1 °C +/- 10 % visually sediment free

| Purge Volume (gals) | Time | Depth to Water (ft) | Color | Odor | pH | Temp (°C) | Cond. (µmhos/cm) | Turbidity (NTUs) | DO (mg/l) | ORP (mv) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | NO GW Parameters Collected based on SOP | | | | | | | | |

Start Time: 0955 Purge Stop Time: 1042 Elapsed Time: 47 Total Volume Purged: 30 gallons
Average Purge Rate (gallons/min): 0.6 Well Volumes Purged: 5 Water Quality Meter ID: — Calibrated on: —

### SAMPLING DATA

Sampling Method:
Sample Date: N/A Sample Time: N/A Analysis: N/A

### COMMENTS:

DTB = 47.8 ft btoc prior to development – very soft bottom, difficult to determine
DTB = 47.68 ft btoc after development

Water was visually sediment free at end of purging

# GROUNDWATER DEVELOPMENT/SAMPLING DATA SHEET

PROJECT NAME: SOPUS - ROXANA PROJECT NUMBER: 215628.15000
DATE: 01/24/13
WEATHER: Cold, cloudy 25°F
FIELD PERSONNEL: Betty Hailemariam and Tim Carroll
MONITORING WELL ID: MW-17

## INITIAL DATA

Well Diameter: 2 in.
Total Depth of Well: 49.90 ft btoc
Depth to Water: 41.59 ft btoc
Height of Water Column: 8.31 ft
(0.163 gallons/ft for 2 inch well, 1.468 gallons/ft for 6-inch well)

Gallons/Lin.Ft: 0.163
Vol. Of Water Column: 1.35 gallons
Min. Purge Volume: 6.78 gallons (5 volumes)
Depth to Top of Screen: 34 ft btoc

Water Added during Drilling: 5 gallons
Water to be Removed: 2.5 gallons (5x added)
Ambient PID/FID Reading: 0 ppm
Wellbore PID/FID Reading: 0 ppm

## PURGE DATA

Purge Method: hurricane pump

| Purge Volume (gals) | Time | Depth to Water (ft) | Color | Odor | pH | Temp (°C) | Cond. (µmhos/cm) | Turbidity (NTUs) | DO (mg/l) | ORP (mv) |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 12:13 | | | | | | | | | |
| 12.5 | 12:33 | | | | | | | | | |
| 18 | 12:45 | | | | | | | | | |
| 25 | 13:14 | | | | | | | | | |
| 28 | 13:30 | | | | | | | | | |

Not applicable based on SOP

Start Time: 12:13 Purge Stop Time: 13:47 Elapsed Time: 1hr and 34min Total Volume Purged: 33 gallo
Average Purge Rate (gallons/min): 2.8 Well Volumes Purged: 33.5 Water Quality Meter ID: Calibrated on:

## SAMPLING DATA

Sampling Method:

Sample Date: N/A Sample Time: N/A Analysis: N/A

COMMENTS:
DTB = 49.90 ft btoc prior to development
DTB = 49.90 ft btoc after development

- Soft bottom.
- No soil parameter was taken based on SOP
- The water was sediment free and clear when purging of water is stopped/ Total Volume of water purged: 33gal
- The probe was clean and sediment free after guging DTB after development

Betty Hailemariam

BH

# GROUNDWATER DEVELOPMENT/SAMPLING DATA SHEET

PROJECT NAME: SOPUS - ROXANA PROJECT NUMBER: 21562850.15000
DATE: 11/24/13
WEATHER: Cloudy, Cold, 25°F
FIELD PERSONNEL: Betty Hailemariam / Tim Carroll
MONITORING WELL ID: MN-18

## INITIAL DATA

Well Diameter: 2 in.
Total Depth of Well: 50.50 ft btoc
Depth to Water: 42.04 ft btoc
Height of Water Column: 8.46 ft
(0.163 gallons/ft for 2 inch well, 1.468 gallons/ft for 6-inch well)

Gallons/Lin.Ft: 0.163
Vol. Of Water Column: 1.38 gallons
Min. Purge Volume: 5.9 gallons (5 volumes)
Depth to Top of Screen: 35 ft btoc

Water Added during Drilling: 5 gallons
Water to be Removed: 25 gallons (5x added)
Ambient PID/FID Reading: 0 ppm
Wellbore PID/FID Reading: 0 ppm

## PURGE DATA

Purge Method: hurricane pump

| Purge Volume (gals) | Time | Depth to Water (ft) | Color | Odor | pH | Temp (°C) | Cond. (µmhos/cm) | Turbidity (NTUs) | DO (mg/l) | ORP (mv) |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 2:59 | | GW | | | | | | | |
| 12.5 | 3:27 | | ~~Bail~~ parameters are not taken | | | | | | | |
| 15 | 3:32 | | | | | | | | | |
| 17.5 | 3:40 | | based on SOP | | | | | | | |
| 20 | 3:47 | | | | | | | | | |
| 24 | 3:55 | | | | | | | | | |
| 28 | 4:07 | | | | | | | | | |
| 32 | 4:21 | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

Start Time: 2:59 pm Purge Stop Time: 4:21 pm Elapsed Time: 1hr and 22min Total Volume Purged: 32 gallo
Average Purge Rate (gallons/min): 2.6 Well Volumes Purged: 5 Water Quality Meter ID: N/A Calibrated on: N/A

## SAMPLING DATA

Sampling Method:

Sample Date: N/A Sample Time: N/A Analysis: N/A

## COMMENTS:

DTB = 50.50 ft btoc prior to development
DTB = 50.50 ft btoc after development

- The bottom is soft. It's hard to find the depth.
- Water was visually sediment free at the end of purging

Betty Hailemariam
Baf

# GROUNDWATER DEVELOPMENT/SAMPLING DATA SHEET

PROJECT NAME: SOPUS - ROXANA
PROJECT NUMBER: 21562850.15000
DATE: 01/25/13
WEATHER: Cold, cloudy, 30°F
FIELD PERSONNEL: Betty Hailemariam / Tim Carroll
MONITORING WELL ID: MW-19

## INITIAL DATA

Well Diameter: 2 in. 51.95
Total Depth of Well: ~~42.53~~ ft btoc
Depth to Water: 42.53 ft btoc
Height of Water Column: 9.42 ft
(0.163 gallons/ft for 2 inch well, 1.468 gallons/ft for 6-inch well)

Gallons/Lin.Ft: 0.163
Vol. Of Water Column: 1.54 gallons
Min. Purge Volume: 7.68 gallons (5 volumes)
Depth to Top of Screen: 37 ft btoc

Water Added during Drilling: 5 gallons
Water to be Removed: 2.5 gallons (5x added)
Ambient PID/FID Reading: 0 ppm
Wellbore PID/FID Reading: 0.1 ppm

## PURGE DATA

Purge Method: hurricane pump

| Purge Volume (gals) | Time | Depth to Water (ft) | Color | Odor | pH | Temp (°C) | Cond. (µmhos/cm) | Turbidity (NTUs) | DO (mg/l) | ORP (mv) |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0841 | | | | | | | | | |
| 12 | 0905 | | | | | | | | | |
| 20 | 0912 | | GW | parameters | | are | not | taked | | |
| 25 | 0919 | | | | | | | | | |
| 27 | 09:30 | | | | | | | | | |
| 29 | 09:37 | | | based | on | SOP. | | | | |
| 32 | 9:53 | | | | | | | | | |
| 33 | 9:55 | | | | | | | | | |
| 35 | 9:59 | | | | | | | | | |
| 36 | 10:01 | | | | | | | | | |

Start Time: 8:41 *
Average Purge Rate (gallons/min): 1.9
Purge Stop Time: 10:01
Well Volumes Purged: 5
Elapsed Time: 1hr and 20min
Water Quality Meter ID: N/A
Total Volume Purged: 36 gallo
Calibrated on: N/A

## SAMPLING DATA

Sampling Method:

Sample Date: N/A
Sample Time: N/A
Analysis: N/A

## COMMENTS:

DTB = 51.95 ft btoc prior to development
DTB = 51.95 ft btoc after development

- 9:40 - 9:50 → The pump was not ~~bem~~ pumping water. At 9:50 started working after the pump is low
- Soft bottom before and after well developing.
- The water was sediment free and clear when purging water is stopped

* ~~10 minutes~~ (
* The 10 minutes ~~are~~ of stopping time is considered. (The time when the water is not being pumped)

GROUNDWATER DEVELOPMENT/SAMPLING DATA SHEET

PROJECT NAME: SOPUS - ROXANA PROJECT NUMBER: 215628S.15000
DATE: 01/25/13
WEATHER: Cold, Cloudy, 34°F
FIELD PERSONNEL: Betty Hailemariam and Tim Carroll
MONITORING WELL ID: MW-20

**INITIAL DATA**

Well Diameter: 2 in.
Total Depth of Well: 51.80 ft btoc
Depth to Water: 43.32 ft btoc
Height of Water Column: 8.48 ft
(0.163 gallons/ft for 2 inch well, 1.468 gallons/ft for 6-inch well)

Gallons/Lin.Ft: 0.163
Vol. Of Water Column: 1.38 gallons
Min. Purge Volume: 6.91 gallons (5 volumes)
Depth to Top of Screen: 37 ft btoc

Water Added during Drilling: 5 gallons
Water to be Removed: 25 gallons (5x added)
Ambient PID/FID Reading: 0.1 ppm
Wellbore PID/FID Reading: 0.1 ppm

**PURGE DATA**

Purge Method:

| Purge Volume (gals) | Time | Depth to Water (ft) | Color | Odor | pH | Temp (°C) | Cond. (µmhos/cm) | Turbidity (NTUs) | DO (mg/l) | ORP (mv) |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 10:38 | | | | | | | | | |
| 10 | 10:57 | | | | | | | | | |
| 20.5 | 11:07 | No GW parameter was taken based on SOP. | | | | | | | | |
| 20 | 11:18 | | | | | | | | | |
| 25 | 11:28 | | | | | | | | | |

Start Time: 10:38
Average Purge Rate (gallons/min): 2
Purge Stop Time: 11:28
Well Volumes Purged: 5
Elapsed Time: 50 min
Water Quality Meter ID: N/A
Total Volume Purged: 25 gallo
Calibrated on: N/A

**SAMPLING DATA**

Sampling Method:

Sample Date: N/A Sample Time: N/A Analysis: N/A

**COMMENTS:**

DTB = 51.80 ft btoc prior to development *
DTB = 52 * ft btoc after development [At 25 gallons of water purged]
- Soft bottom.
- The pump stopped working after 25 gallons of water is purged.
- The water was sediment free and clear ~~at~~ when the pump stopped working.

# GROUNDWATER DEVELOPMENT/SAMPLING DATA SHEET

PROJECT NAME: SOPUS - Roxana
PROJECT NUMBER: 216023501.15000 BS
DATE: 1/29/13
WEATHER: Cloudy 40°F
FIELD PERSONNEL: L. Pathmow, T. Carroll
MONITORING WELL ID: MW-20

## INITIAL DATA

Well Diameter: 2 in.
Total Depth of Well: 51.48 ft btoc
Depth to Water: 43.31 ft btoc
Height of Water Column: 8.17 ft
(0.163 gallons/ft for 2 inch well, 1.468 gallons/ft for 6-inch well)

Gallons/Lin.Ft: 0.163
Vol. Of Water Column: _____ gallons
Min. Purge Volume: _____ gallons (5 volumes)
Depth to Top of Screen: 37 ft btoc

Water Added during Drilling: 5 gallons
Water to be Removed: 25 gallons (5x added)
Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 0.0 ppm

## PURGE DATA

Purge Method: hurricane pump

| Purge Volume (gals) | Time | Depth to Water (ft) | Color | Odor | pH | Temp (°C) | Cond. (µmhos/cm) | Turbidity (NTUs) | DO (mg/l) | ORP (mv) |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1055 | | | | | | | | | |
| 10 | 1110 | No GW parameters were taken | | | | | | | | |
| | | | | based on SOP. | | | | | | |

Start Time: 1055
Purge Stop Time: 1110
Elapsed Time: 15 min
Total Volume Purged: 10 gallo
Average Purge Rate (gallons/min): —
Well Volumes Purged: —
Water Quality Meter ID: NA
Calibrated on: NA

## SAMPLING DATA

Sampling Method:

Sample Date: N/A
Sample Time: N/A
Analysis: N/A

COMMENTS:
DTB = 51.48 ft btoc prior to development
DTB = 51.48 ft btoc after development

- Only needed to purge ~7 gallons to finish developing.
- The water was sediment free and clean when purging water is stopped

# GROUNDWATER DEVELOPMENT/SAMPLING DATA SHEET

PROJECT NAME: Roxana- SOPUS
PROJECT NUMBER: 215628S0.15000
DATE: 1/29/13
WEATHER: Cloudy, Rainy 40°F
FIELD PERSONNEL: L. Rathnow, T. Carroll
MONITORING WELL ID: MW-21

## INITIAL DATA

Well Diameter: 2 in.
Total Depth of Well: 50.40 ft btoc
Depth to Water: 43.15 ft btoc
Height of Water Column: 7.25 ft
(0.163 gallons/ft for 2 inch well, 1.468 gallons/ft for 6-inch well)

Gallons/Lin.Ft: 0.163
Vol. Of Water Column: 1.18175 gallons
Min. Purge Volume: 5.90875 gallons (5 volumes)
Depth to Top of Screen: ~36.00 ft btoc

Water Added during Drilling: 10 gallons
Water to be Removed: 50 gallons (5x added)
Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 0.0 ppm

## PURGE DATA

Purge Method: hurricane pump

| Purge Volume (gals) | Time | Depth to Water (ft) | Color | Odor | pH | Temp (°C) | Cond. (µmhos/cm) | Turbidity (NTUs) | DO (mg/l) | ORP (mv) |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1134 | | | | | | | | | |
| 25 | 1300 | | | | | | | | | |
| ~~42~~ 45 | 1210 | | | | | | | | | |
| 55 | 1218 | | | | | | | | | |
| 65 | 1226 | | | | | | | | | |

No GW parameters were taken based on SOP

Start Time: 1134
Purge Stop Time: 1226
Elapsed Time: ~~48~~ 52 HR
Total Volume Purged: 65 gallo
Average Purge Rate (gallons/min):
Well Volumes Purged: 5
Water Quality Meter ID: NA
Calibrated on: NA

## SAMPLING DATA

Sampling Method:

Sample Date: N/A
Sample Time: N/A
Analysis: N/A

## COMMENTS:

DTB = 50.40 ft btoc prior to development
DTB = 50.55 ft btoc after development
Soft bottom before + after well developing.
Need ~60 gallons total to get minimum purge volume.
Water was visually sediment free at end of purging

## GROUNDWATER DEVELOPMENT/SAMPLING DATA SHEET

PROJECT NAME: SOPUS-Roxana PROJECT NUMBER: 21562850.15000
DATE: 12/4/12
WEATHER:
FIELD PERSONNEL: Rich Hart
MONITORING WELL ID: MW-22

### INITIAL DATA

Well Diameter: 2 in. 48
Total Depth of Well: ~~47.72~~ ft btoc
Depth to Water: 41.27 ft btoc
Height of Water Column: 6.73 ft
(0.163 gallons/ft for 2 inch well, 1.468 gallons/ft for 6-inch well)

Gallons/Lin.Ft: 0.163
Vol. Of Water Column: 1.1 gallons
Min. Purge Volume: 5.5 gallons (5 volumes)
Depth to Top of Screen: 38 ft btoc

Water Added during Drilling: 5 gallons
Water to be Removed: 25 gallons (5x added)
Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 465 ppm

### PURGE DATA

Purge Method: hurricane pump

Stabilized: +/- 0.2 +/- 1 °C +/- 10 % visually sediment free

| Purge Volume (gals) | Time | Depth to Water (ft) | Color | Odor | pH | Temp (°C) | Cond. (µmhos/cm) | Turbidity (NTUs) | DO (mg/l) | ORP (mv) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | NO GW Parameters Collected based on SOP | | | | | | | | |

Start Time: 0910 Purge Stop Time: 1025 Elapsed Time: 75 min Total Volume Purged: 35 gallons
Average Purge Rate (gallons/min): 0.5 Well Volumes Purged: 5 Water Quality Meter ID: Calibrated on:

### SAMPLING DATA

Sampling Method:
Sample Date: N/A Sample Time: N/A Analysis: N/A

### COMMENTS:

DTB = 47.72 ft btoc prior to development
DTB = 48.46 ft btoc after development

Water was sediment free at end of purging

## GROUNDWATER DEVELOPMENT/SAMPLING DATA SHEET

PROJECT NAME: SOPUS - Roxana PROJECT NUMBER: 215628850.15000
DATE: 1-18-13
WEATHER: 50s, sunny
FIELD PERSONNEL: C. Kretzer, B. Hailemariam
MONITORING WELL ID: ROST-3-MW

### INITIAL DATA

Well Diameter: 2 in.
Total Depth of Well: 50 ft btoc
Depth to Water: 41.68 ft btoc
Height of Water Column: 8.32 ft
(0.163 gallons/ft for 2 inch well, 1.468 gallons/ft for 6-inch well)

Gallons/Lin.Ft: 0.163
Vol. Of Water Column: 1.4 gallons
Min. Purge Volume: 7 gallons (5 volumes)
Depth to Top of Screen: 40 ft btoc

Water Added during Drilling: 5 gallons
Water to be Removed: 25 gallons (5x added)
Ambient PID/FID Reading: 0.0 ppm
Wellbore PID/FID Reading: 259 ppm

### PURGE DATA

Purge Method: hurricane pump

Stabilized: +/- 0.2 +/- 1 °C +/- 10 % visually sediment free

| Purge Volume (gals) | Time | Depth to Water (ft) | Color | Odor | pH | Temp (°C) | Cond. (µmhos/cm) | Turbidity (NTUs) | DO (mg/l) | ORP (mv) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | NO GW Parameters Collected based on SOP | | | | | | | | | |

Start Time: 1420 Purge Stop Time: 1632 Elapsed Time: 132 min Total Volume Purged: 32 gallons
Average Purge Rate (gallons/min): 4 Well Volumes Purged: 5 Water Quality Meter ID: — Calibrated on: —

### SAMPLING DATA

Sampling Method:
Sample Date: N/A Sample Time: N/A Analysis: N/A

### COMMENTS:

DTB = 48.65 ft btoc prior to development – soft bottom made difficult to gauge
DTB = 48.43 ft btoc after development

water was visually sediment free at end of purging.

## SOIL VAPOR DEVELOPMENT & PURGING INFORMATION

| LOCATION | ID | ID Color | Bottom of Screen | Tubing Volume | Sand Pack Volume | Sample Train Volume | Target Development Purge Volume | Actual Development Purge Volume | Target Sampling Purge Volume | Actual Sampling Purge Volume |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | mL | | | | | | |
| VMP-47 | VMP-47-5 | yellow | 5.5 | 18.08 | 18,765 | 9.65 | 56,378.18 | 99,000 | 83.18 | 90 |
| | VMP-47-10 | blue | 10.5 | 30.13 | 18,765 | 9.65 | 56,414.33 | 112,500 | 119.33 | 120 |
| | VMP-47-20 | green | 20.5 | 54.23 | 18,765 | 9.65 | 56,486.63 | 112,500 | 191.63 | 195 |
| | VMP-47-30 | red | 30.5 | 78.33 | 18,765 | 9.65 | 56,558.93 | 112,500 | 263.93 | 270 |
| VMP-48 | VMP-48-5 | yellow | 5.5 | 18.08 | 18,765 | 9.65 | 56,378.18 | 60,000 | 83.18 | 90 |
| | VMP-48-10 | blue | 10.5 | 30.13 | 18,765 | 9.65 | 56,414.33 | 60,000 | 119.33 | 120 |
| | VMP-48-20 | green | 20.5 | 54.23 | 18,765 | 9.65 | 56,486.63 | 60,000 | 191.63 | 195 |
| | VMP-48-30 | red | 30.5 | 78.33 | 18,765 | 9.65 | 56,558.93 | 60,000 | 263.93 | 270 |
| VMP-49 | VMP-49-5 | yellow | 5.5 | 18.08 | 18,765 | 9.65 | 56,378.18 | 57,200 | 83.18 | 90 |
| | VMP-49-10 | blue | 10.5 | 30.13 | 18,765 | 9.65 | 56,414.33 | 57,200 | 119.33 | 120 |
| | VMP-49-20 | green | 20.5 | 54.23 | 18,765 | 9.65 | 56,486.63 | 57,200 | 191.63 | 195 |
| | VMP-49-30 | red | 30.5 | 78.33 | 18,765 | 9.65 | 56,558.93 | 57,200 | 263.93 | 270 |
| VMP-50 | VMP-50-5 | yellow | 5.5 | 18.08 | 18,765 | 9.65 | 56,378.18 | 60,000 | 83.18 | 90 |
| | VMP-50-10 | blue | 10.5 | 30.13 | 18,765 | 9.65 | 56,414.33 | 60,000 | 119.33 | 120 |
| | VMP-50-20 | green | 20.5 | 54.23 | 18,765 | 9.65 | 56,486.63 | 60,000 | 191.63 | 195 |
| | VMP-50-30 | red | 30.5 | 78.33 | 18,765 | 9.65 | 56,558.93 | 60,000 | 263.93 | 270 |
| VMP-51 | VMP-51-5 | yellow | 5.5 | 18.08 | 18,765 | 9.65 | 56,378.18 | 61,900 | 83.18 | 90 |
| | VMP-51-10 | blue | 10.5 | 30.13 | 18,765 | 9.65 | 56,414.33 | 61,900 | 119.33 | 120 |
| | VMP-51-20 | green | 20.5 | 54.23 | 18,765 | 9.65 | 56,486.63 | 61,900 | 191.63 | 195 |
| | VMP-51-30 | red | 30.5 | 78.33 | 18,765 | 9.65 | 56,558.93 | 61,900 | 263.93 | 270 |
| VMP-52 | VMP-52-5 | yellow | 5.5 | 18.08 | 18,765 | 9.65 | 56,378.18 | 63,000 | 83.18 | 90 |
| | VMP-52-10 | blue | 10.5 | 30.13 | 18,765 | 9.65 | 56,414.33 | 63,000 | 119.33 | 120 |
| | VMP-52-20 | green | 20.5 | 54.23 | 18,765 | 9.65 | 56,486.63 | 63,000 | 191.63 | 195 |
| | VMP-52-30 | red | 30.5 | 78.33 | 18,765 | 9.65 | 56,558.93 | 63,000 | 263.93 | 270 |
| VMP-53 | VMP-53-5 | yellow | 5.5 | 18.08 | 18,765 | 9.65 | 56,378.18 | 64,000 | 83.18 | 90 |
| | VMP-53-10 | blue | 10.5 | 30.13 | 18,765 | 9.65 | 56,414.33 | 64,000 | 119.33 | 120 |
| | VMP-53-20 | green | 20.5 | 54.23 | 18,765 | 9.65 | 56,486.63 | 64,000 | 191.63 | 195 |
| | VMP-53-30 | red | 30.5 | 78.33 | 18,765 | 9.65 | 56,558.93 | 64,000 | 263.93 | 270 |
| VMP-54 | VMP-54-5 | yellow | 5.5 | 18.08 | 18,765 | 9.65 | 56,378.18 | 60,000 | 83.18 | 90 |
| | VMP-54-10 | blue | 10.5 | 30.13 | 18,765 | 9.65 | 56,414.33 | 60,000 | 119.33 | 120 |
| | VMP-54-20 | green | 20.5 | 54.23 | 18,765 | 9.65 | 56,486.63 | 60,000 | 191.63 | 195 |
| | VMP-54-30 | red | 30.5 | 78.33 | 18,765 | 9.65 | 56,558.93 | 60,000 | 263.93 | 270 |
| VMP-55 | VMP-55-5 | yellow | 5.5 | 18.08 | 18,765 | 9.65 | 56,378.18 | Not Developed | 83.18 | Not Purged |
| | VMP-55-10 | blue | 10.5 | 30.13 | 18,765 | 9.65 | 56,414.33 | Not Developed | 119.33 | Not Purged |
| | VMP-55-20 | green | 20.5 | 54.23 | 18,765 | 9.65 | 56,486.63 | 59,000 | 191.63 | 195 |
| | VMP-55-30 | red | 30.5 | 78.33 | 18,765 | 9.65 | 56,558.93 | Not Developed | 263.93 | Not Purged |

**NOTES:**

1) The sand pack volume shown on this table is the volume of the entire sand pack, not just the pore space volume within the sand pack.
2) The target development purge volume is equal to 3 times the combined volume of the port tubing, sand pack, and sample train.
3) The target sampling purge volume is equal to 3 times the combined volume of the port tubing and sample train.
4) Three depths at VMP-55 were determined to be submerged at the time of development and sampling.

- **2012 MW WELLS**
- **2012 VMP WELLS**

# Roxana Drilling 2013 Data Review

**Laboratory SDG: MC16336**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 1/30/2013**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| MW-17-21 | MW-17-35 |
| MW-17-14 | TRIP BLANK 8260 |
| TRIP BLANK 8011 | MW-18-12 |
| MW-18-18 | MW-18-39 |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS/LCSD recoveries and RPDs were outside evaluation criteria. Method 8011 VOC surrogate recovery for bromofluorobenzene was outside evaluation criteria in sample MW-18-18. VOC MS/MSD recoveries and MS/MSD RPDs were outside of evaluation criteria in sample MW-18-12. Internal standard area recoveries for certain quality control samples were outside evaluation criteria. The initial calibration verification recovery for acrolein, vinyl acetate, acetone, and 2-hexanone exceeded 50 percent difference (%D). Professional judgment was used to qualify the common lab contaminant methylene chloride in samples MW-17-21, MW-17-14, and MW-18-12. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 0.6°C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required. Additionally, the laboratory issued a letter indicating that VOC trip blanks were received headspace free, and that the cooler receipt form had been incorrectly marked as not applicable with regards to trip blanks and VOC headspace.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSG4871-BS/BSD | VOCs | Acrolein | **36/36** | 0 | 70-130/25 |
| MSG4871-BS/BSD | VOCs | Chloromethane | **133/138** | 4 | 70-130/25 |
| MSM1789-BS/BSD | VOCs | Acetone | **62/51** | 19 | 70-130/25 |
| MSM1789-BS/BSD | VOCs | Acrolein | **53/41** | **26** | 70-130/25 |
| MSM1789-BS/BSD | VOCs | Vinyl acetate | 73/**60** | 19 | 70-130/25 |
| MSM1790-BS1/BSD1 | VOCs | Acetone | **62/51** | 19 | 70-130/25 |
| MSM1790-BS1/BSD1 | VOCs | Acrolein | **53/41** | **26** | 70-130/25 |
| MSM1790-BS1/BSD1 | VOCs | Vinyl acetate | 73/**60** | 19 | 70-130/25 |
| MSV573-BS/BSD | VOCs | Acetone | **146/138** | 5 | 70-130/25 |
| MSV573-BS/BSD | VOCs | Acrolein | **53/54** | 3 | 70-130/25 |
| MSV573-BS/BSD | VOCs | 2-Chloroethyl vinyl ether | **32/36** | 12 | 70-130/25 |

Analytical data that required qualification based on LCS/LCSD data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS/LCSD MSV573-BS/BSD was associated with the trip blank quality control sample and is not qualified.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| MW-17-35 | VOCs | Acrolein | **UJ** |
| MW-18-18 | VOCs | Acrolein | **UJ** |
| MW18-39 | VOCs | Acrolein | **UJ** |
| MW-17-21 | VOCs | Acetone | **UJ** |
| MW-17-21 | VOCs | Acrolein | **UJ** |
| MW-17-21 | VOCs | Vinyl acetate | **UJ** |
| MW-17-14 | VOCs | Acetone | **UJ** |
| MW-17-14 | VOCs | Acrolein | **UJ** |
| MW-17-14 | VOCs | Vinyl acetate | **UJ** |
| MW-18-12 | VOCs | Acetone | **UJ** |
| MW-18-12 | VOCs | Acrolein | **UJ** |
| MW-18-12 | VOCs | Vinyl acetate | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

No

| Sample ID | Parameter | Surrogate | Recovery | Criteria |
|---|---|---|---|---|
| MW-18-18 | VOCs by 8011 | Bromofluorobenzene (S) | **360** | 61-167 |

Analytical data reported as non-detect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. No qualification of data was required.

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, sample MW-18-12 was spiked and analyzed for VOCs.

*Were MS/MSD recoveries within evaluation criteria?*

No

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/ RPD Criteria |
|---|---|---|---|---|---|
| MW-18-12 | VOCs | Acetone | **52/66** | **50** | 70-130/30 |
| MW-18-12 | VOCs | Acrolein | **26/39** | **63** | 70-130/30 |
| MW-18-12 | VOCs | Acrylonitrile | **54**/85 | **68** | 70-130/30 |
| MW-18-12 | VOCs | Benzene | **57**/86 | **64** | 70-130/30 |
| MW-18-12 | VOCs | Bromobenzene | **39**/84 | **95** | 70-130/30 |
| MW-18-12 | VOCs | Bromochloromethane | **65**/88 | **55** | 70-130/30 |
| MW-18-12 | VOCs | Bromodichloromethane | **58**/87 | **64** | 70-130/30 |
| MW-18-12 | VOCs | Bromoform | **62**/93 | **65** | 70-130/30 |
| MW-18-12 | VOCs | Bromomethane | **69**/83 | **45** | 70-130/30 |
| MW-18-12 | VOCs | 2-Butanone (MEK) | **37**/85 | **99** | 70-130/30 |
| MW-18-12 | VOCs | n-Butylbenzene | **28**/72 | **107** | 70-130/30 |
| MW-18-12 | VOCs | sec-Butylbenzene | **29**/77 | **110** | 70-130/30 |
| MW-18-12 | VOCs | tert-Butylbenzene | **28**/78 | **113** | 70-130/30 |
| MW-18-12 | VOCs | Carbon disulfide | **64**/91 | **60** | 70-130/30 |
| MW-18-12 | VOCs | Carbon tetrachloride | **50**/92 | **82** | 70-130/30 |
| MW-18-12 | VOCs | Chlorobenzene | **43**/84 | **86** | 70-130/30 |
| MW-18-12 | VOCs | Chloroethane | **61**/82 | **54** | 70-130/30 |
| MW-18-12 | VOCs | 2-Chloroethyl vinyl ether | **0**/75 | **200** | 70-130/30 |
| MW-18-12 | VOCs | Chloroform | **58**/84 | **61** | 70-130/30 |
| MW-18-12 | VOCs | o-Chlorotoluene | **31**/76 | **104** | 70-130/30 |
| MW-18-12 | VOCs | p-Chlorotoluene | **32**/76 | **102** | 70-130/30 |
| MW-18-12 | VOCs | Dibromochloromethane | **60**/93 | **68** | 70-130/30 |
| MW-18-12 | VOCs | 1,2-Dichlorobenzene | **31**/73 | **101** | 70-130/30 |
| MW-18-12 | VOCs | 1,3-Dichlorobenzene | **31**/75 | **104** | 70-130/30 |
| MW-18-12 | VOCs | 1,4-Dichlorobenzene | **32**/75 | **101** | 70-130/30 |
| MW-18-12 | VOCs | Dichlorodifluoromethane | **53**/83 | **68** | 70-130/30 |
| MW-18-12 | VOCs | 1,1-Dichloroethane | **57**/84 | **62** | 70-130/30 |
| MW-18-12 | VOCs | 1,2-Dichloroethane | **59**/84 | **60** | 70-130/30 |
| MW-18-12 | VOCs | 1,1-Dichloroethene | **65**/96 | **64** | 70-130/30 |

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/ RPD Criteria |
|---|---|---|---|---|---|
| MW-18-12 | VOCs | cis-1,2-Dichloroethene | **61**/84 | **57** | 70-130/30 |
| MW-18-12 | VOCs | trans-1,2-Dichloroethene | **63**/88 | **57** | 70-130/30 |
| MW-18-12 | VOCs | 1,2-Dichloropropane | **52**/81 | **68** | 70-130/30 |
| MW-18-12 | VOCs | 1,3-Dichloropropane | **58**/87 | **65** | 70-130/30 |
| MW-18-12 | VOCs | 2,2-Dichloropropane | **52**/84 | **72** | 70-130/30 |
| MW-18-12 | VOCs | 1,1-Dichloropropene | **50**/93 | **83** | 70-130/30 |
| MW-18-12 | VOCs | cis-1,3-Dichloropropene | **53**/81 | **66** | 70-130/30 |
| MW-18-12 | VOCs | trans-1,3-Dichloropropene | **59**/89 | **65** | 70-130/30 |
| MW-18-12 | VOCs | Ethylbenzene | **39**/89 | **99** | 70-130/30 |
| MW-18-12 | VOCs | Hexachlorobutadiene | **28**/74 | **110** | 70-130/30 |
| MW-18-12 | VOCs | 2-Hexanone | **63**/98 | **67** | 70-130/30 |
| MW-18-12 | VOCs | Isopropylbenzene | **31**/83 | **111** | 70-130/30 |
| MW-18-12 | VOCs | p-Isopropyltoluene | **31**/82 | **110** | 70-130/30 |
| MW-18-12 | VOCs | Methyl tert butyl ether | **26**/76 | **117** | 70-130/30 |
| MW-18-12 | VOCs | 4-Methyl-2-pentanone (MIBK) | **66**/94 | **60** | 70-130/30 |
| MW-18-12 | VOCs | Methylene bromide | **65**/90 | **56** | 70-130/30 |
| MW-18-12 | VOCs | Methylene chloride | **57**/79 | **55** | 70-130/30 |
| MW-18-12 | VOCs | Naphthalene | **25**/87 | **128** | 70-130/30 |
| MW-18-12 | VOCs | n-Propylbenzene | **30**/77 | **108** | 70-130/30 |
| MW-18-12 | VOCs | Styrene | **41**/84 | **91** | 70-130/30 |
| MW-18-12 | VOCs | 1,1,1,2-Tetrachloroethane | **48**/88 | **82** | 70-130/30 |
| MW-18-12 | VOCs | 1,1,2,2-Tetrachloroethane | **58**/93 | **71** | 70-130/30 |
| MW-18-12 | VOCs | Tetrachloroethene | **44**/97 | **97** | 70-130/30 |
| MW-18-12 | VOCs | Toluene | **48**/97 | **90** | 70-130/30 |
| MW-18-12 | VOCs | 1,2,3-Trichlorobenzene | **24/65** | **111** | 70-130/30 |
| MW-18-12 | VOCs | 1,2,4-Trichlorobenzene | **23/63** | **112** | 70-130/30 |
| MW-18-12 | VOCs | 1,1,1-Trichloroethane | **50**/87 | **78** | 70-130/30 |
| MW-18-12 | VOCs | 1,1,2-Trichloroethane | **60**/90 | **64** | 70-130/30 |
| MW-18-12 | VOCs | Trichloroethene | **54**/90 | **73** | 70-130/30 |
| MW-18-12 | VOCs | Trichlorofluoromethane | **54**/92 | **76** | 70-130/30 |
| MW-18-12 | VOCs | 1,2,3-Trichloropropane | **56**/96 | **77** | 70-130/30 |
| MW-18-12 | VOCs | 1,2,4-Trimethylbenzene | **30**/79 | **109** | 70-130/30 |
| MW-18-12 | VOCs | 1,3,5-Trimethylbenzene | **30**/79 | **109** | 70-130/30 |
| MW-18-12 | VOCs | Vinyl acetate | **29/48** | **72** | 70-130/30 |
| MW-18-12 | VOCs | Vinyl chloride | **69**/83 | **44** | 70-130/30 |
| MW-18-12 | VOCs | m,p-Xylene | **38/**88 | **100** | 70-130/30 |
| MW-18-12 | VOCs | o-Xylene | **36**/85 | **101** | 70-130/30 |
| MW-18-12 | VOCs | Xylene (total) | **37**/87 | **101** | 70-130/30 |

MS/MSD RPDs alone were outside criteria for 3 out of 62 reported analytes in sample MW-18-12. MS/MSD RPDs outside evaluation criteria are not individually listed for analytes with MS/MSD recoveries within evaluation criteria. USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone and LCS recoveries were within evaluation criteria with the exception of compounds listed and qualified as appropriate in Section 5.0 of this data review. No further qualification of the data was required.

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

No

| Sample ID | Parameter | Analyte | IS Area Recovery | IS Criteria |
|---|---|---|---|---|
| MSM1789-BS | VOCs | Tert butyl alcohol-$d_9$ | **115690** | 26686-106744 |
| MSM1790-BS1 | VOCs | Tert butyl alcohol-$d_9$ | **115690** | 26686-106744 |
| MSM1789-BSD | VOCs | Tert butyl alcohol-$d_9$ | **113884** | 26686-106744 |
| MSM1790-BSD1 | VOCs | Tert butyl alcohol-$d_9$ | **113884** | 26686-106744 |
| MC16336-6MS | VOCs | Pentafluorobenzene | **62655** | 119102-476406 |
| MC16336-6MS | VOCs | 1,4-Difluorobenzene | **90748** | 175675-702700 |
| MC16336-6MS | VOCs | Chlorobenzene-$d_5$ | **48977** | 94152-376608 |
| MC16336-6MS | VOCs | 1,4-Dichlorobenzene-$d_4$ | **52679** | 100724-402894 |
| MC16336-6MS | VOCs | Tert butyl alcohol-$d_9$ | **15350** | 28079-112316 |

LCS/LCSD MSM1789-BS/BSD, MSM1790-BS1/BSD1 and matrix spike MC16336-6MS are quality control samples and are not qualified. No qualification of data was required.

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

No

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

Yes, professional judgment was used to qualify the common laboratory contaminant methylene chloride reported at concentrations less than two times (2X) the reporting limit (RL).

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| MW-17-21 | Methylene chloride | - | **U** | Professional Judgment |
| MW-17-14 | Methylene chloride | - | **U** | Professional Judgment |
| MW-18-12 | Methylene chloride | - | **U** | Professional Judgment |

Additionally, samples MW-17-35, MW-18-18, and MW-18-39 were associated with the initial calibration verification recovery for acetone, acrolein, vinyl acetate, and 2-hexanone that exceeded 50 percent difference (%D). Samples MW-17-21, and MW-17-

14 were associated with initial calibration verification recovery for acetone that exceeded 50 percent difference (%D). Acetone and acrolein were previously qualified due to LCS/LCSD data in Section 5.0 of this review in several samples. Analytes in samples associated with ICV %D greater than 50% were qualified as summarized in the following table.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| MW-17-35 | VOCs | Acetone | **UJ** |
| MW-17-35 | VOCs | 2-Hexanone | **UJ** |
| MW-17-35 | VOCs | Vinyl acetate | **UJ** |
| MW-18-18 | VOCs | Acetone | **UJ** |
| MW-18-18 | VOCs | 2-Hexanone | **UJ** |
| MW-18-18 | VOCs | Vinyl acetate | **UJ** |
| MW-18-39 | VOCs | Acetone | **UJ** |
| MW-18-39 | VOCs | 2-Hexanone | **UJ** |
| MW-18-39 | VOCs | Vinyl acetate | **UJ** |

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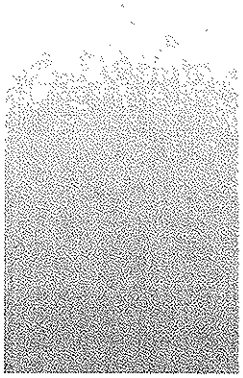
01/02/13





## Technical Report for

Shell Oil

URSMOSTL: Roxana Drilling, Roxana, IL

21562735.00015

Accutest Job Number: MC16336

Sampling Dates: 11/26/12 - 11/28/12

Report to:

URS Corporation

elizabeth.kunkel@URS.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **106**

Reviewed on 1/30/2013

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Reza Tand
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) ISO 17025:2005 (L2235)

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# Sample Summary

Shell Oil

Job No: MC16336

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562735.00015

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| MC16336-1 | 11/26/12 | 11:00 | WMP | 11/29/12 | SO | Soil | MW-17-21 |
| MC16336-2 | 11/26/12 | 11:10 | WMP | 11/29/12 | SO | Soil | MW-17-35 |
| MC16336-3 | 11/26/12 | 11:20 | WMP | 11/29/12 | SO | Soil | MW-17-14 |
| MC16336-4 | 11/26/12 | 00:00 | WMP | 11/29/12 | AQ | Trip Blank Water | TRIP BLANK 8260 |
| MC16336-5 | 11/26/12 | 00:00 | WMP | 11/29/12 | AQ | Trip Blank Water | TRIP BLANK 8011 |
| MC16336-6 | 11/28/12 | 13:25 | WMP | 11/29/12 | SO | Soil | MW-18-12 |
| MC16336-6D | 11/28/12 | 13:25 | WMP | 11/29/12 | SO | Soil Dup/MSD | MW-18-12 |
| MC16336-6S | 11/28/12 | 13:25 | WMP | 11/29/12 | SO | Soil Matrix Spike | MW-18-12 |
| MC16336-7 | 11/28/12 | 13:40 | WMP | 11/29/12 | SO | Soil | MW-18-18 |
| MC16336-8 | 11/28/12 | 13:45 | WMP | 11/29/12 | SO | Soil | MW-18-39 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

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# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC16336 |
| **Site:** | URSMOSTL: Roxana Drilling, Roxana, IL | **Report Date** | 12/19/2012 1:07:48 PM |

6 Sample(s), 2 Trip Blank(s) were collected on between 11/26/2012 and 11/28/2012 and were received at Accutest on 11/29/2012 properly preserved, at 0.6 Deg. C and intact. These Samples received an Accutest job number of MC16336. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. 1-Chlorohexane was searched in the library search and reported only if detections were found.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSV573

- All samples were analyzed within the reecommended method holding time.
- Sample(s) MC16419-1MS, MC16419-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- BS/BSD Recovery(s) for 2-Chloroethyl vinyl ether, Acetone, Acrolein are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for 2-Chloroethyl vinyl ether, Acrolein are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

**Matrix** SO **Batch ID:** MSG4871

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16254-4MS, MC16254-4MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- BS/BSD Recovery(s) for Acrolein, Chloromethane are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for 1,3,5-Trimethylbenzene, 1,4-Dioxane, 4-Methyl-2-pentanone (MIBK), Acrolein are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Initial calibration verification MSG4851-ICV4851, MSG4871-CC4851 for acrolein exceeds 50% Difference. Acrolein is considered a difficult method analyte.
- Initial calibration verification MSG4851-ICV4851 for vinyl acetate exceeds 50% Difference. vinyl acetate is within criteria in continuing calibration check standard MSG4871-CC4851.
- Initial calibration verification MSG4851-ICV4851 for acetone, 2-Hexanone exceeds 50% Differenee (response bias high). Associated samples are non-detect for these compounds.

**Matrix** SO **Batch ID:** MSM1789

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC16366-7MS, MC16366-7MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Acetone, Acrolein are outside control limits. Blank Spike meets program technical requirements.
- BSD Recovery(s) for Acetone, Aerolein, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,2-Diehlorobenzene, 1,3-Dichlorobenzene, 2-Hexanone, Acetone, Acrolein, Hexachlorobutadiene, n-Butylbenzene, n-Propylbenzene, Naphthalene, p-Isopropyltoluene, sec-Butylbenzene, tert-Butylbenzene, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interferenee. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 2-Butanone (MEK), 2-Hexanone, Acetone, Acrolein, Hexachlorobutadiene, n-Butylbenzene, p-Isopropyltoluene, sec-Butylbenzene, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

## Volatiles by GCMS By Method SW846 8260B

| Matrix SO | Batch ID: MSM1789 |
|---|---|

- RPD(s) for MSD for 2-Chloroethyl vinyl ether, Vinyl Acetate are outside control limits for sample MC16366-7MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- RPD of MSM1789-BSD for Acrolein: Outside control limits. Blank Spike meets program technical requirements.
- Initial calibration verification MSM1784-ICV1784 for acetone exceeds 50% Difference (response bias high). Associated sample is non-detect for this compound.

| Matrix SO | Batch ID: MSM1790 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16336-6MS, MC16336-6MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- BSD1 Recovery(s) for Acetone, Acrolein, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.
- BS1 Recovery(s) for Acetone, Acrolein are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,1-Dichloropropene, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,2-Dichloroethane, 1,2-Dichloropropane, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,3-Dichloropropane, 1,4-Dichlorobenzene, 2,2-Dichloropropane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acetone, Acrolein, Acrylonitrile, Benzene, Bromobenzene, Bromochloromethane, Bromodichloromethane, Bromoform, Bromomethane, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroethane, Chloroform, cis-1,2-Dichloroethene, cis-1,3-Dichloropropene, Dibromochloromethane, Dichlorodifluoromethane, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, m,p-Xylene, Methyl Tert Butyl Ether, Methylene bromide, Methylene chloride, n-Butylbenzene, n-Propylbenzene, Naphthalene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, p-Isopropyltoluene, sec-Butylbenzene, Styrene, tert-Butylbenzene, Tetrachloroethene, Toluene, trans-1,2-Dichloroethene, trans-1,3-Dichloropropene, Trichloroethene, Trichlorofluoromethane, Vinyl Acetate, Vinyl chloride, Xylene (total) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Acetone, Acrolein, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,1-Dichloropropene, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,2-Dichloroethane, 1,2-Dichloropropane, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,3-Dichloropropane, 1,4-Dichlorobenzene, 1,4-Dioxane, 2,2-Dichloropropane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acetone, Acrolein, Acrylonitrile, Benzene, Bromobenzene, Bromochloromethane, Bromodichloromethane, Bromoform, Bromomethane, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroethane, Chloroform, Chloromethane, cis-1,2-Dichloroethene, cis-1,3-Dichloropropene, Dibromochloromethane, Dichlorodifluoromethane, Ethyl methacrylate, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, m,p-Xylene, Methyl Tert Butyl Ether, Methylene bromide, Methylene chloride, n-Butylbenzene, n-Propylbenzene, Naphthalene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, p-Isopropyltoluene, sec-Butylbenzene, Styrene, tert-Butylbenzene, Tetrachloroethene, Toluene, trans-1,2-Dichloroethene, trans-1,3-Dichloropropene, Trichloroethene, Trichlorofluoromethane, Vinyl Acetate, Vinyl chloride, Xylene (total) are outside control limits for sample MC16336-6MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- RPD of MSM1790-BSD1 for Acrolein: Blank Spike meets program technical requirements.

## Volatiles by GC By Method SW846 8011

| Matrix AQ | Batch ID: OP31226 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC16100-11MS, MC16100-11MSD were used as the QC samples indicated.

| Matrix SO | Batch ID: OP31352 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16336-6MS, MC16336-6MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MC16336-7 for Bromofluorobenzene (S): Outside control limits due to possible matrix interference.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN41128 |
|---|---|

- Sample(s) MC16336-6DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC16336).

ACCUTEST
LABORATORIES

Elizabeth Kunkel
URS
St. Louis, MO

**February 15, 2013**

Accutest Job: MC16336

Ms. Elizabeth Kunkel,

On the report for SDG MC16336, the sample receipt confirmation was marked incorrectly by the lab. The SDG did have a trip blank that was received in the cooler, the trip blank was marked on the COC, and the vials that were sent for VOC analysis were received headspace free.

Sincerely,

Jeremy M. Vienneau
Accutest Laboratories of New England, Inc.

# Summary of Hits



Job Number: MC16336
Account: Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Collected: 11/26/12 thru 11/28/12

| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| MC16336-1 | MW-17-21 | | | | | |
| Methylene chloride | | 0.0014 J | 0.0021 | 0.0012 | mg/kg | SW846 8260B |
| Total TIC, Volatile | | 0.0142 J | | | mg/kg | |
| MC16336-2 | MW-17-35 | | | | | |
| Benzene | | 2.91 | 0.33 | 0.19 | mg/kg | SW846 8260B |
| n-Butylbenzene | | 9.56 | 3.3 | 0.12 | mg/kg | SW846 8260B |
| sec-Butylbenzene | | 1.97 J | 3.3 | 0.15 | mg/kg | SW846 8260B |
| Ethylbenzene | | 11.8 | 1.3 | 0.16 | mg/kg | SW846 8260B |
| Isopropylbenzene | | 8.44 | 3.3 | 0.15 | mg/kg | SW846 8260B |
| p-Isopropyltoluene | | 1.17 J | 3.3 | 0.12 | mg/kg | SW846 8260B |
| Naphthalene | | 5.30 | 3.3 | 0.81 | mg/kg | SW846 8260B |
| n-Propylbenzene | | 29.1 | 3.3 | 0.66 | mg/kg | SW846 8260B |
| Toluene | | 0.833 J | 3.3 | 0.55 | mg/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | | 120 | 3.3 | 0.15 | mg/kg | SW846 8260B |
| 1,3,5-Trimethylbenzene | | 30.5 | 3.3 | 0.14 | mg/kg | SW846 8260B |
| m,p-Xylene | | 27.6 | 1.3 | 0.51 | mg/kg | SW846 8260B |
| o-Xylene | | 4.67 | 1.3 | 0.16 | mg/kg | SW846 8260B |
| Xylene (total) | | 32.3 | 1.3 | 0.16 | mg/kg | SW846 8260B |
| Total TIC, Volatile | | 249.2 J | | | mg/kg | |
| MC16336-3 | MW-17-14 | | | | | |
| Methylene chloride | | 0.0013 J | 0.0021 | 0.0012 | mg/kg | SW846 8260B |
| Total TIC, Volatile | | 0.292 J | | | mg/kg | |
| MC16336-4 | TRIP BLANK 8260 | | | | | |
| No hits reported in this sample. | | | | | | |
| MC16336-5 | TRIP BLANK 8011 | | | | | |
| No hits reported in this sample. | | | | | | |
| MC16336-6 | MW-18-12 | | | | | |
| Benzene | | 0.00041 J | 0.00056 | 0.00033 | mg/kg | SW846 8260B |
| Methylene chloride | | 0.0015 J | 0.0022 | 0.0013 | mg/kg | SW846 8260B |
| Total TIC, Volatile | | 2.07 J | | | mg/kg | |
| MC16336-7 | MW-18-18 | | | | | |
| Benzene | | 3.27 | 0.75 | 0.44 | mg/kg | SW846 8260B |

# Summary of Hits

Job Number: MC16336
Account: Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Collected: 11/26/12 thru 11/28/12

| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| n-Butylbenzene | | 33.3 | 7.5 | 0.28 | mg/kg | SW846 8260B |
| sec-Butylbenzene | | 7.92 | 7.5 | 0.35 | mg/kg | SW846 8260B |
| Ethylbenzene | | 290 | 3.0 | 0.36 | mg/kg | SW846 8260B |
| Isopropylbenzene | | 30.7 | 7.5 | 0.34 | mg/kg | SW846 8260B |
| p-Isopropyltoluene | | 4.57 J | 7.5 | 0.27 | mg/kg | SW846 8260B |
| Naphthalene | | 60.3 | 7.5 | 1.9 | mg/kg | SW846 8260B |
| n-Propylbenzene | | 91.4 | 7.5 | 1.5 | mg/kg | SW846 8260B |
| Tolnene | | 283 | 7.5 | 1.3 | mg/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | | 396 | 7.5 | 0.34 | mg/kg | SW846 8260B |
| I,3,5-Trimethylbenzene | | 90.1 | 7.5 | 0.32 | mg/kg | SW846 8260B |
| m,p-Xylene | | 690 | 3.0 | 1.2 | mg/kg | SW846 8260B |
| o-Xylene | | 282 | 3.0 | 0.36 | mg/kg | SW846 8260B |
| Xylene (total) | | 972 | 3.0 | 0.36 | mg/kg | SW846 8260B |
| Total TIC, Volatile | | 839 J | | | mg/kg | |
| MC16336-8 | MW-18-39 | | | | | |
| Benzene | | 0.0365 J | 0.058 | 0.034 | mg/kg | SW846 8260B |
| n-Butylbenzene | | 0.977 | 0.58 | 0.021 | mg/kg | SW846 8260B |
| sec-Butylbenzene | | 0.328 J | 0.58 | 0.027 | mg/kg | SW846 8260B |
| Ethylbenzene | | 9.62 | 0.23 | 0.028 | mg/kg | SW846 8260B |
| Hexachlorobutadiene | | 0.121 J | 0.58 | 0.054 | mg/kg | SW846 8260B |
| Isopropylbenzene | | 1.20 | 0.58 | 0.026 | mg/kg | SW846 8260B |
| p-Isopropyltoluene | | 0.678 | 0.58 | 0.021 | mg/kg | SW846 8260B |
| Naphthaleue | | 3.97 | 0.58 | 0.14 | mg/kg | SW846 8260B |
| n-Propylbenzene | | 3.32 | 0.58 | 0.12 | mg/kg | SW846 8260B |
| Toluene | | 4.10 | 0.58 | 0.098 | mg/kg | SW846 8260B |
| 1,2,3-Trichlorobenzene | | 0.254 J | 0.58 | 0.027 | mg/kg | SW846 8260B |
| 1,2,4-Trichlorobenzene | | 0.114 J | 0.58 | 0.026 | mg/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | | 12.2 | 0.58 | 0.026 | mg/kg | SW846 8260B |
| 1,3,5-Trimethylbenzene | | 3.32 | 0.58 | 0.025 | mg/kg | SW846 8260B |
| m,p-Xylene | | 26.6 | 0.23 | 0.091 | mg/kg | SW846 8260B |
| o-Xylene | | 12.7 | 0.23 | 0.028 | mg/kg | SW846 8260B |
| Xylene (total) | | 39.3 | 0.23 | 0.028 | mg/kg | SW846 8260B |
| Total TIC, Volatile | | 46.2 J | | | mg/kg | |

New England ACCUTEST LABORATORIES

4

## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-17-21 | | |
| Lab Sample ID: | MC16336-1 | Date Sampled: | 11/26/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | 91.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M52770.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.31 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0051 | 0.0013 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 0.026 | 0.010 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 0.026 | 0.0013 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.00051 | 0.00030 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0051 | 0.00023 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0051 | 0.00038 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0021 | 0.0021 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0021 | 0.00053 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0051 | 0.0013 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0051 | 0.00019 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0051 | 0.00024 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0051 | 0.00091 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0051 | 0.00017 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0021 | 0.00075 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0021 | 0.00028 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0051 | 0.0013 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0051 | 0.0021 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0021 | 0.00053 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0051 | 0.00048 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0051 | 0.0011 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0051 | 0.00023 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0021 | 0.00030 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0021 | 0.00022 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0021 | 0.00023 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0021 | 0.0012 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0021 | 0.00028 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0021 | 0.00030 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0021 | 0.00038 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0021 | 0.00031 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0021 | 0.00029 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-17-2I | | |
| Lab Sample ID: | MC16336-1 | Date Sampled: | 11/26/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | 91.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0021 | 0.00038 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0051 | 0.00024 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0051 | 0.00089 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0051 | 0.00027 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0021 | 0.00018 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0021 | 0.00051 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.026 | 0.026 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0051 | 0.00070 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.0021 | 0.00025 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0051 | 0.00048 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0051 | 0.00051 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0051 | 0.00023 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0051 | 0.00018 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0021 | 0.00030 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0051 | 0.00051 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0051 | 0.00051 | mg/kg | |
| 75-09-2 | Methylene chloride | ~~0.0014~~ | 0.0021 | 0.0012 | mg/kg | J |
| 91-20-3 | Naphthalene | ND | 0.0051 | 0.0013 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0051 | 0.0010 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0051 | 0.00024 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0051 | 0.0010 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0021 | 0.00044 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0021 | 0.00024 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.0051 | 0.00087 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0051 | 0.00024 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0051 | 0.00024 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0021 | 0.00032 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0021 | 0.00075 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0021 | 0.00031 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0051 | 0.00030 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0051 | 0.00023 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0051 | 0.00022 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0051 | 0.00057 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0021 | 0.00028 | mg/kg | |
| | m,p-Xylene | ND | 0.0021 | 0.00081 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.0021 | 0.00025 | mg/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.0021 | 0.00025 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-17-21 | | |
| Lab Sample ID: | MC16336-1 | Date Sampled: | 11/26/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | 91.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 104% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 110% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | .0142 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-17-21 | | |
| Lab Sample ID: | MC16336-1 | Date Sampled: | 11/26/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 91.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19732.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.2 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0027 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0027 | 0.0010 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 94% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 103% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-17-35 | | |
| Lab Sample ID: | MC16336-2 | Date Sampled: | 11/26/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | 77.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | G122515.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.55 g | 10.0 ml | 20.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 3.3 | 0.82 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 16 | 6.5 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 16 | 0.81 | mg/kg | |
| 71-43-2 | Benzene | 2.91 | 0.33 | 0.19 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 3.3 | 0.15 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 3.3 | 0.24 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 1.3 | 0.14 | mg/kg | |
| 75-25-2 | Bromoform | ND | 1.3 | 1.3 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 1.3 | 0.34 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 3.3 | 0.81 | mg/kg | |
| 104-51-8 | n-Butylbenzene | 9.56 | 3.3 | 0.12 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | 1.97 | 3.3 | 0.15 | mg/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 3.3 | 0.57 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 3.3 | 0.11 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 1.3 | 0.47 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 1.3 | 0.18 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 3.3 | 0.82 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 3.3 | 1.3 | mg/kg | |
| 67-66-3 | Chloroform | ND | 1.3 | 0.34 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 3.3 | 0.30 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 3.3 | 0.72 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 3.3 | 0.15 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 1.3 | 0.19 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.3 | 0.14 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.3 | 0.15 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.3 | 0.14 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 1.3 | 0.74 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.3 | 0.18 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.3 | 0.19 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.3 | 0.24 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.3 | 0.20 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.3 | 0.19 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-17-35 | | |
| Lab Sample ID: | MC16336-2 | Date Sampled: | 11/26/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | 77.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 1.3 | 0.24 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 3.3 | 0.15 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 3.3 | 0.57 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 3.3 | 0.17 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1.3 | 0.11 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1.3 | 0.32 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 16 | 16 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 3.3 | 0.44 | mg/kg | |
| 100-41-4 | Ethylbenzene | 11.8 | 1.3 | 0.16 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 3.3 | 0.30 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 3.3 | 0.33 | mg/kg | UJ |
| 98-82-8 | Isopropylbenzene | 8.44 | 3.3 | 0.15 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | 1.17 | 3.3 | 0.12 | mg/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.3 | 0.19 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 3.3 | 0.33 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 3.3 | 0.32 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 1.3 | 0.76 | mg/kg | |
| 91-20-3 | Naphthalene | 5.30 | 3.3 | 0.81 | mg/kg | |
| 103-65-1 | n-Propylbenzene | 29.1 | 3.3 | 0.66 | mg/kg | |
| 100-42-5 | Styrene | ND | 3.3 | 0.15 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 3.3 | 0.65 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.3 | 0.28 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 1.3 | 0.15 | mg/kg | |
| 108-88-3 | Toluene | 0.833 | 3.3 | 0.55 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 3.3 | 0.15 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 3.3 | 0.15 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.3 | 0.21 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroetbane | ND | 1.3 | 0.48 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 1.3 | 0.14 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.3 | 0.20 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 3.3 | 0.19 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 120 | 3.3 | 0.15 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 30.5 | 3.3 | 0.14 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 3.3 | 0.36 | mg/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 1.3 | 0.18 | mg/kg | |
| | m,p-Xylene | 27.6 | 1.3 | 0.51 | mg/kg | |
| 95-47-6 | o-Xylene | 4.67 | 1.3 | 0.16 | mg/kg | |
| 1330-20-7 | Xylene (total) | 32.3 | 1.3 | 0.16 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-17-35 | | |
| Lab Sample ID: | MC16336-2 | Date Sampled: | 11/26/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | 77.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 92% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 249.2 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-17-35 | | |
| Lab Sample ID: | MC16336-2 | Date Sampled: | 11/26/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 77.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19733.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.4 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0032 | 0.0014 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0032 | 0.0012 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 87% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 90% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-17-14 | | |
| Lab Sample ID: | MC16336-3 | Date Sampled: | 11/26/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | 91.2 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M52771.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.28 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0052 | 0.0013 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 0.026 | 0.010 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 0.026 | 0.0013 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.00052 | 0.00031 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0052 | 0.00023 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0052 | 0.00039 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0021 | 0.0021 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0021 | 0.00054 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0052 | 0.0013 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0052 | 0.00019 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0052 | 0.00024 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0052 | 0.00091 | mg/kg | |
| 75-15-0 | Carbon disnlfide | ND | 0.0052 | 0.00017 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0021 | 0.00075 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0021 | 0.00029 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0052 | 0.0013 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0052 | 0.0021 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0021 | 0.00054 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0052 | 0.00048 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0052 | 0.0011 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0052 | 0.00024 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0021 | 0.00031 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0021 | 0.00022 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0021 | 0.00023 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0021 | 0.0012 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0021 | 0.00028 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0021 | 0.00030 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0021 | 0.00038 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0021 | 0.00031 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0021 | 0.00030 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a componnd

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-17-14 | | |
| Lab Sample ID: | MC16336-3 | Date Sampled: | 11/26/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | 91.2 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0021 | 0.00039 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0052 | 0.00024 | mg/kg | |
| 594-20-7 | 2,2-Dicbloropropane | ND | 0.0052 | 0.00090 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0052 | 0.00027 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0021 | 0.00018 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0021 | 0.00052 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.026 | 0.026 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0052 | 0.00071 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.0021 | 0.00025 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0052 | 0.00048 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0052 | 0.00052 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0052 | 0.00024 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0052 | 0.00019 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0021 | 0.00030 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0052 | 0.00052 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0052 | 0.00051 | mg/kg | |
| 75-09-2 | Methylene chloride | ~~0.0013~~ U | 0.0021 | 0.0012 | mg/kg | J U |
| 91-20-3 | Naphthalene | ND | 0.0052 | 0.0013 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0052 | 0.0011 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0052 | 0.00024 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0052 | 0.0010 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0021 | 0.00044 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0021 | 0.00024 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.0052 | 0.00088 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0052 | 0.00025 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0052 | 0.00024 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0021 | 0.00033 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0021 | 0.00076 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0021 | 0.00032 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0052 | 0.00030 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0052 | 0.00023 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0052 | 0.00022 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0052 | 0.00058 | mg/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 0.0021 | 0.00028 | mg/kg | |
| | m,p-Xylene | ND | 0.0021 | 0.00082 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.0021 | 0.00025 | mg/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.0021 | 0.00025 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-17-14 | | |
| Lab Sample ID: | MC16336-3 | Date Sampled: | 11/26/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | 91.2 |
| Project: | URSMOSTL: Roxana Drilliug, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 103% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 109% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 93% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | .292 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-17-14 | | |
| Lab Sample ID: | MC16336-3 | Date Sampled: | 11/26/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 91.2 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19734.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.1 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0027 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0027 | 0.0011 | mg/kg | |

| CAS No. | Surrogate Recoverics | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 107% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 109% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK 8260 | | |
| Lab Sample ID: | MC16336-4 | Date Sampled: | 11/26/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V14084.D | 1 | 12/07/12 | AMY | n/a | n/a | MSV573 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 3.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.2 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.24 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.62 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.3 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.58 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.78 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.4 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.61 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.55 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.64 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.61 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.87 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.47 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.50 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 1.3 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.50 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.73 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.65 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.48 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.53 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.93 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.45 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.64 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.7 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.62 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.41 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.95 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK 8260 | | |
| Lab Sample ID: | MC16336-4 | Date Sampled: | 11/26/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.72 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.64 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 1.6 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.91 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.45 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.20 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 15 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.81 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.51 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 2.1 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.50 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.57 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.41 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 2.9 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.1 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.83 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.58 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.45 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.57 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.60 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.42 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.51 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.85 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.50 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.78 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.29 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.85 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.35 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.47 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.3 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.63 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.73 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.58 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.58 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK 8260 | | |
| Lab Sample ID: | MC16336-4 | Date Sampled: | 11/26/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 91% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK 8011 | | |
| Lab Sample ID: | MC16336-5 | Date Sampled: | 11/26/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 11/29/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19444.D | 1 | 11/30/12 | AP | 11/30/12 | OP31226 | GBK704 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 35.4 ml | 2.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.015 | 0.013 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.015 | 0.010 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 104% | | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 111% | | 36-173% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-18-12 | | |
| Lab Sample ID: | MC16336-6 | Date Sampled: | 11/28/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | 92.5 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M52769.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1790 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.86 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0056 | 0.0014 | mg/kg | uJ |
| 107-02-8 | Acrolein | ND | 0.028 | 0.011 | mg/kg | uJ |
| 107-13-1 | Acrylonitrile | ND | 0.028 | 0.0014 | mg/kg | |
| 71-43-2 | Benzene | 0.00041 | 0.00056 | 0.00033 | mg/kg | J |
| 108-86-1 | Bromobenzene | ND | 0.0056 | 0.00025 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0056 | 0.00042 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0022 | 0.00024 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0022 | 0.0022 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0022 | 0.00058 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0056 | 0.0014 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0056 | 0.00020 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0056 | 0.00026 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0056 | 0.00098 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0056 | 0.00018 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0022 | 0.00081 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0022 | 0.00031 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0056 | 0.0014 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0056 | 0.0022 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0022 | 0.00057 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0056 | 0.00052 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0056 | 0.0012 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0056 | 0.00025 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0022 | 0.00033 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0022 | 0.00024 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0022 | 0.00025 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0022 | 0.00023 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0022 | 0.0013 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0022 | 0.00030 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0022 | 0.00032 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0022 | 0.00041 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0022 | 0.00033 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0022 | 0.00032 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | MW-18-12 | | |
| Lab Sample ID: | MC16336-6 | Date Sampled: | 11/28/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | 92.5 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

4.6
4

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0022 | 0.00041 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0056 | 0.00026 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0056 | 0.00096 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0056 | 0.00029 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0022 | 0.00019 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0022 | 0.00055 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.028 | 0.028 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0056 | 0.00076 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.0022 | 0.00027 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0056 | 0.00052 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0056 | 0.00056 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0056 | 0.00025 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0056 | 0.00020 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0022 | 0.00032 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0056 | 0.00056 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0056 | 0.00055 | mg/kg | |
| 75-09-2 | Methylene chloride | ~~0.0015~~ U | 0.0022 | 0.0013 | mg/kg | J U |
| 91-20-3 | Naphthalene | ND | 0.0056 | 0.0014 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0056 | 0.0011 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0056 | 0.00026 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0056 | 0.0011 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0022 | 0.00047 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0022 | 0.00025 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.0056 | 0.00094 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0056 | 0.00026 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0056 | 0.00025 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0022 | 0.00035 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0022 | 0.00082 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0022 | 0.00024 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0022 | 0.00034 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0056 | 0.00032 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0056 | 0.00025 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0056 | 0.00024 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0056 | 0.00062 | mg/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 0.0022 | 0.00030 | mg/kg | |
| | m,p-Xylene | ND | 0.0022 | 0.00088 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.0022 | 0.00027 | mg/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.0022 | 0.00027 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-18-12 | | |
| Lab Sample ID: | MC16336-6 | Date Sampled: | 11/28/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | 92.5 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 121% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 94% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 2.07 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-18-12 | | |
| Lab Sample ID: | MC16336-6 | Date Sampled: | 11/28/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 92.5 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19735.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.5 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0027 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0027 | 0.0010 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 94% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 96% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates valne exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-18-18 | | |
| Lab Sample ID: | MC16336-7 | Date Sampled: | 11/28/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | 73.9 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | G122516.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.08 g | 10.0 ml | 10.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 7.5 | 1.9 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 38 | 15 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 38 | 1.9 | mg/kg | |
| 71-43-2 | Benzene | 3.27 | 0.75 | 0.44 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 7.5 | 0.34 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 7.5 | 0.56 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 3.0 | 0.32 | mg/kg | |
| 75-25-2 | Bromoform | ND | 3.0 | 3.0 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 3.0 | 0.78 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 7.5 | 1.9 | mg/kg | |
| 104-51-8 | n-Butylbenzene | 33.3 | 7.5 | 0.28 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | 7.92 | 7.5 | 0.35 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 7.5 | 1.3 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 7.5 | 0.25 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 3.0 | 1.1 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 3.0 | 0.41 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 7.5 | 1.9 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 7.5 | 3.0 | mg/kg | |
| 67-66-3 | Chloroform | ND | 3.0 | 0.78 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 7.5 | 0.70 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 7.5 | 1.7 | mg/kg | |
| 106-43-4 | p-Chlorotolnene | ND | 7.5 | 0.34 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 3.0 | 0.45 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 3.0 | 0.33 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 3.0 | 0.34 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 3.0 | 0.32 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 3.0 | 1.7 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 3.0 | 0.41 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 3.0 | 0.43 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 3.0 | 0.55 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 3.0 | 0.45 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 3.0 | 0.43 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-18-18 | | |
| Lab Sample ID: | MC16336-7 | Date Sampled: | 11/28/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | 73.9 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 3.0 | 0.56 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 7.5 | 0.35 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 7.5 | 1.3 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 7.5 | 0.40 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 3.0 | 0.26 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 3.0 | 0.75 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 38 | 38 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 7.5 | 1.0 | mg/kg | |
| 100-41-4 | Ethylbenzene | 290 | 3.0 | 0.36 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 7.5 | 0.70 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 7.5 | 0.75 | mg/kg | uJ |
| 98-82-8 | Isopropylbenzene | 30.7 | 7.5 | 0.34 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | 4.57 | 7.5 | 0.27 | mg/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 3.0 | 0.43 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 7.5 | 0.75 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 7.5 | 0.74 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 3.0 | 1.7 | mg/kg | |
| 91-20-3 | Naphthalene | 60.3 | 7.5 | 1.9 | mg/kg | |
| 103-65-1 | n-Propylbenzene | 91.4 | 7.5 | 1.5 | mg/kg | |
| 100-42-5 | Styrene | ND | 7.5 | 0.35 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 7.5 | 1.5 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 3.0 | 0.64 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 3.0 | 0.35 | mg/kg | |
| 108-88-3 | Toluene | 283 | 7.5 | 1.3 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 7.5 | 0.36 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 7.5 | 0.35 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 3.0 | 0.48 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 3.0 | 1.1 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 3.0 | 0.32 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 3.0 | 0.46 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 7.5 | 0.44 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 396 | 7.5 | 0.34 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 90.1 | 7.5 | 0.32 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 7.5 | 0.84 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 3.0 | 0.41 | mg/kg | uJ |
| | m,p-Xylene | 690 | 3.0 | 1.2 | mg/kg | |
| 95-47-6 | o-Xylene | 282 | 3.0 | 0.36 | mg/kg | |
| 1330-20-7 | Xylene (total) | 972 | 3.0 | 0.36 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a componnd

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-18-18 | | |
| Lab Sample ID: | MC16336-7 | Date Sampled: | 11/28/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | 73.9 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 106% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 100% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 104% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 839 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-18-18 | | |
| Lab Sample ID: | MC16336-7 | Date Sampled: | 11/28/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 73.9 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19736.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #I | 30.4 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0033 | 0.0015 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0033 | 0.0013 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# I | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 360% [a] | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 96% | | 61-167% |

(a) Outside control limits due to possible matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-18-39 | | |
| Lab Sample ID: | MC16336-8 | Date Sampled: | 11/28/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | 93.9 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | G122514.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.74 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.58 | 0.15 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 2.9 | 1.2 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 2.9 | 0.14 | mg/kg | |
| 71-43-2 | Benzene | 0.0365 | 0.058 | 0.034 | mg/kg | J |
| 108-86-1 | Bromobenzene | ND | 0.58 | 0.026 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.58 | 0.043 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.23 | 0.024 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.23 | 0.23 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.23 | 0.060 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.58 | 0.14 | mg/kg | |
| 104-51-8 | n-Butylbenzene | 0.977 | 0.58 | 0.021 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | 0.328 | 0.58 | 0.027 | mg/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 0.58 | 0.10 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.58 | 0.019 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.23 | 0.084 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.23 | 0.032 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.58 | 0.15 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.58 | 0.23 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.23 | 0.060 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.58 | 0.054 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.58 | 0.13 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.58 | 0.026 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.23 | 0.034 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.23 | 0.025 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.23 | 0.026 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.23 | 0.024 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.23 | 0.13 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.23 | 0.031 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.23 | 0.033 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.23 | 0.042 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.23 | 0.035 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.23 | 0.033 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-18-39 | | |
| Lab Sample ID: | MC16336-8 | Date Sampled: | 11/28/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | 93.9 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.23 | 0.043 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.58 | 0.027 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.58 | 0.10 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.58 | 0.030 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.23 | 0.020 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.23 | 0.057 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 2.9 | 2.9 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.58 | 0.079 | mg/kg | |
| 100-41-4 | Ethylbenzene | 9.62 | 0.23 | 0.028 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | 0.121 | 0.58 | 0.054 | mg/kg | J |
| 591-78-6 | 2-Hexanone | ND | 0.58 | 0.058 | mg/kg | UJ |
| 98-82-8 | Isopropylbenzene | 1.20 | 0.58 | 0.026 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | 0.678 | 0.58 | 0.021 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.23 | 0.033 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.58 | 0.058 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.58 | 0.057 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.23 | 0.13 | mg/kg | |
| 91-20-3 | Naphthalene | 3.97 | 0.58 | 0.14 | mg/kg | |
| 103-65-1 | n-Propylbenzene | 3.32 | 0.58 | 0.12 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.58 | 0.027 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.58 | 0.12 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.23 | 0.049 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.23 | 0.026 | mg/kg | |
| 108-88-3 | Toluene | 4.10 | 0.58 | 0.098 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | 0.254 | 0.58 | 0.027 | mg/kg | J |
| 120-82-1 | 1,2,4-Trichlorobenzene | 0.114 | 0.58 | 0.026 | mg/kg | J |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.23 | 0.036 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.23 | 0.085 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.23 | 0.024 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.23 | 0.035 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.58 | 0.034 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 12.2 | 0.58 | 0.026 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 3.32 | 0.58 | 0.025 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.58 | 0.065 | mg/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 0.23 | 0.032 | mg/kg | |
| | m,p-Xylene | 26.6 | 0.23 | 0.091 | mg/kg | |
| 95-47-6 | o-Xylene | 12.7 | 0.23 | 0.028 | mg/kg | |
| 1330-20-7 | Xylene (total) | 39.3 | 0.23 | 0.028 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-18-39 | | |
| Lab Sample ID: | MC16336-8 | Date Sampled: | 11/28/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8260B | Percent Solids: | 93.9 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 97% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 91% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 46.2 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presnmptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-18-39 | | |
| Lab Sample ID: | MC16336-8 | Date Sampled: | 11/28/12 |
| Matrix: | SO - Soil | Date Received: | 11/29/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 93.9 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19737.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.7 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.0010 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 92% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 94% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration rauge
J = Indicates au estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES

## Misc. Forms



### Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

ACCUTEST LABORATORIES

# CHAIN OF CUSTODY

Accutest Laboratories of New England
495 Technology Center West, Building One
TEL 508-481-6200 FAX: 508-481-7753
www.accutest.com

PAGE 1 OF 1

FED EX Tracking # | Bottle Order Control # | Accutest Quote # | Accutest Job # MC16336

| Client / Reporting Information | Project Information | Requested Analysis ( see TEST CODE sheet) |
|---|---|---|
| Company Name: URS | Project Name: Roxana Drilling | |
| Street Address: | Street: | Billing Information ( If different from Report to) |
| City: State: Zip: | City: Roxana, IL | Company Name: URS |
| Project Contact: E. Kunkel E-mail: | Project#: 21562735.00015 | Street Address: |
| Phone #: Fax #: | Client PO#: | City: State: Zip: |
| Sampler(s) Name(s): W. Pennington Phone#: 314 452 8929 | Project Manager: D. Palmer | Attention: PO#: |

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB - Equipment Blank; RB - Rinse Blank; TB - Trip Blank

| Accutest Sample # | Field ID / Point of Collection | MEOH DI Vial # | Collection Date | Collection Time | Sampled by | Matrix | # of bottles | HCl | NaOH | HNO3 | H2SO4 | NONE | DI Water | MEOH | ENCORE | Bisulfite | VOC 8260 | VOC 8011 | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | MW-17-21 | | 11/26/12 | 1100 | wmp | SO | 4 | | | | | X | | X | | X | X | X | |
| -2 | MW-17-35 | | ↓ | 1110 | wmp | SO | 4 | | | | | X | | X | | X | X | X | |
| -3 | MW-17-14 | | ↓ | 1120 | wmp | SO | 4 | | | | | X | | X | | X | X | X | |
| -4 | trip blank 8260 | | ↓ | | | | 2 | | | | | | | | | | X | ~~X~~ wmp | |
| -5 | trip blank 8011 | | ↓ | | | | 2 | | | | | | | | | | | X | |
| -6 | MW-18-12 | | 11/28/12 | 1325 | wmp | SO | 4 | | | | | X | | X | | X | X | X | |
| -6S | MW-18-12MS | | ↓ | 1325 | wmp | SO | 4 | | | | | X | | X | | X | X | X | |
| -6SD | MW-18-12MSD | | ↓ | 1325 | wmp | SO | 4 | | | | | X | | X | | X | X | X | |
| -7 | MW-18-18 | | ↓ | 1340 | wmp | SO | 4 | | | | | X | | X | | X | X | X | |
| -8 | MW-18-39 | | ↓ | 1345 | wmp | SO | 4 | | | | | X | | X | | X | X | X | 15A, 2D1 |
| | | | | | | | | | | | | | | | | | | | 10G2 |

Turnaround Time ( Business days) | Approved By (Accutest PM) / Date

- [x] Std. 10 Business Days
- [ ] Std. 5 Business Days (By Contract only)
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [x] FULLT1 ( Level 3+4 )
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [x] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery

| Relinquished by Sampler | Date Time | Received By | Relinquished By | Date Time | Received By |
|---|---|---|---|---|---|
| 1 W. Pennington | 11/28/21500 | 1 Fed EX | 2 | 11/24/12 | 2 [signature] |
| 3 | | 3 | 4 | | 4 |
| 5 | | 5 | Custody Seal # ☐ Intact ☐ Not Intact | Preserved where applicable ☐ | On Ice ☒ Cooler Temp 0.6° |

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MC16336: Chain of Custody
Page 1 of 3

# Accutest Laboratories Sample Receipt Summary

**Accutest Job Number:** MC16336 **Client:** URS **Immediate Client Services Action Required:** Yes

**Date / Time Received:** 11/29/2012 9:30 **Delivery Method:** FedEx

**Project:** ROXANA DRILLING **No. Coolers:** 1 **Airbill #'s:**

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2. Custody Seals Intact: | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification: | Infared gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservation | Y | N | N/A |
|---|---|---|---|
| 1. Trip Blank present / cooler: | ☐ | ☐ | |
| 2. Trip Blank listed on COC: | ☐ | ☐ | |
| 3. Samples preserved properly: | ☑ | ☐ | |
| 4. VOCs headspace free: | ☐ | ☐ | ☑ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles: | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree: | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1 Sample rec'd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3. Condition of sample: | Intact |

| Sample Integrity - Instructions | Y | N | N/A |
|---|---|---|---|
| 1. Analysis requested is clear: | ☑ | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | ☑ | |
| 3. Sufficient volume rec'd for analysis: | ☑ | ☐ | |
| 4. Compositing instructions clear. | ☐ | ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ | ☐ | ☑ |

Comments

-4 and -5 both trip blanks. One of each was received frozen broken, one remains for analysis each.

Accutest Laboratories
V 508.481.6200

495 Technology Center West, Bldg One
F 508 481 7753

Marlborough, MA
www/accutest.com

5.1

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**MC16336: Chain of Custody**
**Page 2 of 3**

ACCUTEST

## Sample Receipt Summary - Problem Resolution

**Accutest Job Number:** MC16336

**CSR:** Jeremy Vienneau **Response Date:** 11/30/2012

**Response:** Client was notified of the broken vials. See email in file.

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**MC16336: Chain of Custody**
**Page 3 of 3**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC16336

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562735.00015



| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC16336-1 Collected: 26-NOV-12 11:00 By: WMP | | | Received: 29-NOV-12 By: AF | | | |
| MW-17-21 | | | | | | |
| MC16336-1 | SM21 2540 B MOD. | 03-DEC-12 | HS | | | %SOL |
| MC16336-1 | SW846 8260B | 07-DEC-12 15:35 | AMY | | | V8260SL+ |
| MC16336-1 | SW846 8011 | 09-DEC-12 21:52 | AP | 08-DEC-12 | AP | V8011SL |
| MC16336-2 Collected: 26-NOV-12 11:10 By: WMP | | | Received: 29-NOV-12 By: AF | | | |
| MW-17-35 | | | | | | |
| MC16336-2 | SM21 2540 B MOD. | 03-DEC-12 | HS | | | %SOL |
| MC16336-2 | SW846 8260B | 03-DEC-12 19:24 | JM | | | V8260SL+ |
| MC16336-2 | SW846 8011 | 09-DEC-12 22:16 | AP | 08-DEC-12 | AP | V8011SL |
| MC16336-3 Collected: 26-NOV-12 11:20 By: WMP | | | Received: 29-NOV-12 By: AF | | | |
| MW-17-14 | | | | | | |
| MC16336-3 | SM21 2540 B MOD. | 03-DEC-12 | HS | | | %SOL |
| MC16336-3 | SW846 8260B | 07-DEC-12 16:05 | AMY | | | V8260SL+ |
| MC16336-3 | SW846 8011 | 09-DEC-12 22:41 | AP | 08-DEC-12 | AP | V8011SL |
| MC16336-4 Collected: 26-NOV-12 00:00 By: WMP | | | Received: 29-NOV-12 By: AF | | | |
| TRIP BLANK 8260 | | | | | | |
| MC16336-4 | SW846 8260B | 07-DEC-12 18:58 | AMY | | | V8260SL+ |
| MC16336-5 Collected: 26-NOV-12 00:00 By: WMP | | | Received: 29-NOV-12 By: AF | | | |
| TRIP BLANK 8011 | | | | | | |
| MC16336-5 | SW846 8011 | 30-NOV-12 13:23 | AP | 30-NOV-12 | NK | V8011SL |
| MC16336-6 Collected: 28-NOV-12 13:25 By: WMP | | | Received: 29-NOV-12 By: AF | | | |
| MW-18-12 | | | | | | |
| MC16336-6 | SM21 2540 B MOD. | 03-DEC-12 | HS | | | %SOL |
| MC16336-6 | SW846 8260B | 07-DEC-12 15:05 | AMY | | | V8260SL+ |
| MC16336-6 | SW846 8011 | 09-DEC-12 23:05 | AP | 08-DEC-12 | AP | V8011SL |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC16336

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562735.00015

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC16336-7 Collected: 28-NOV-12 13:40 By: WMP Received: 29-NOV-12 By: AF | | | | | | |
| MW-18-18 | | | | | | |
| MC16336-7 | SM21 2540 B MOD. | 03-DEC-12 | HS | | | %SOL |
| MC16336-7 | SW846 8260B | 03-DEC-12 19:53 | JM | | | V8260SL+ |
| MC16336-7 | SW846 8011 | 09-DEC-12 23:30 | AP | 08-DEC-12 | AP | V8011SL |
| MC16336-8 Collected: 28-NOV-12 13:45 By: WMP Received: 29-NOV-12 By: AF | | | | | | |
| MW-18-39 | | | | | | |
| MC16336-8 | SM21 2540 B MOD. | 03-DEC-12 | HS | | | %SOL |
| MC16336-8 | SW846 8260B | 03-DEC-12 18:55 | JM | | | V8260SL+ |
| MC16336-8 | SW846 8011 | 09-DEC-12 23:55 | AP | 08-DEC-12 | AP | V8011SL |

# Accutest Internal Chain of Custody



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 11/29/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16336-1.1 | Walk In Ref #9 | Hamid Siamak | 12/03/12 08:10 | Retrieve from Storage |
| MC16336-1.1 | Hamid Siamak | Walk In Ref #9 | 12/03/12 11:04 | Return to Storage |
| MC16336-1.1 | Walk In Ref #9 | Michael Rolo | 12/06/12 09:27 | Retrieve from Storage |
| MC16336-1.1 | Michael Rolo | Walk In Ref #9 | 12/06/12 09:28 | Retnrn to Storage |
| MC16336-1.1 | Walk In Ref #9 | Chris Cataldo | 12/08/12 10:33 | Retrieve from Storage |
| MC16336-1.1 | Chris Cataldo | Walk In Ref #9 | 12/08/12 21:09 | Return to Storage |
| MC16336-1.3 | VOC Ref #10 | Amy Min Yang | 12/07/12 14:05 | Retrieve from Storage |
| MC16336-1.3 | Amy Min Yang | GCMSM | 12/07/12 14:05 | Load on Instrnment |
| MC16336-1.4 | VOC Ref #10 | Gary Krasinski | 11/30/12 11:40 | Retrieve from Storage |
| MC16336-1.4 | Gary Krasinski | VOC Ref #10 | 12/03/12 08:14 | Return to Storage |
| MC16336-2.1 | Walk In Ref #9 | Hamid Siamak | 12/03/12 08:10 | Retrieve from Storage |
| MC16336-2.1 | Hamid Siamak | Walk In Ref #9 | 12/03/12 11:04 | Return to Storage |
| MC16336-2.1 | Walk In Ref #9 | Michael Rolo | 12/06/12 09:27 | Retrieve from Storage |
| MC16336-2.1 | Michael Rolo | Walk In Ref #9 | 12/06/12 09:28 | Return to Storage |
| MC16336-2.1 | Walk In Ref #9 | Chris Cataldo | 12/08/12 10:33 | Retrieve from Storage |
| MC16336-2.1 | Chris Cataldo | Walk In Ref #9 | 12/08/12 21:09 | Return to Storage |
| MC16336-2.4 | VOC Ref #10 | Gary Krasinski | 11/30/12 11:40 | Retrieve from Storage |
| MC16336-2.4 | Gary Krasinski | VOC Ref #10 | 12/03/12 10:10 | Return to Storage |
| MC16336-2.4 | VOC Ref #10 | Jaime Maslowski | 12/03/12 10:16 | Retrieve from Storage |
| MC16336-2.4 | Jaime Maslowski | VOC Ref #10 | 12/04/12 09:49 | Return to Storage |
| MC16336-3.1 | Walk In Ref #9 | Hamid Siamak | 12/03/12 08:10 | Retrieve from Storage |
| MC16336-3.1 | Hamid Siamak | Walk In Ref #9 | 12/03/12 11:04 | Return to Storage |
| MC16336-3.1 | Walk In Ref #9 | Michael Rolo | 12/06/12 09:27 | Retrieve from Storage |
| MC16336-3.1 | Michael Rolo | Walk In Ref #9 | 12/06/12 09:28 | Return to Storage |
| MC16336-3.1 | Walk In Ref #9 | Chris Cataldo | 12/08/12 10:33 | Retrieve from Storage |
| MC16336-3.1 | Chris Cataldo | Walk In Ref #9 | 12/08/12 21:09 | Return to Storage |
| MC16336-3.2 | VOC Ref #10 | Amy Min Yang | 12/07/12 14:05 | Retrieve from Storage |
| MC16336-3.2 | Amy Min Yang | GCMSM | 12/07/12 14:05 | Load on Instrument |
| MC16336-3.4 | VOC Ref #10 | Gary Krasinski | 11/30/12 11:40 | Retrieve from Storage |
| MC16336-3.4 | Gary Krasinski | VOC Ref #10 | 12/03/12 08:14 | Return to Storage |
| MC16336-4.1 | VOC Ref #2 | Amy Min Yaug | 12/07/12 15:21 | Retrieve from Storage |
| MC16336-4.1 | Amy Min Yang | GCMSV | 12/07/12 15:21 | Load on Instrument |
| MC16336-4.1 | GCMSV | Amy Min Yang | 12/10/12 17:18 | Unload from Instrument |
| MC16336-4.1 | Amy Min Yang | VOC Ref #2 | 12/10/12 17:18 | Return to Storage |
| MC16336-6.1 | Walk In Ref #9 | Hamid Siamak | 12/03/12 08:10 | Retrieve from Storage |

5.3

# Accutest Internal Chain of Custody



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 11/29/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16336-6.1 | Hamid Siamak | Walk In Ref #9 | 12/03/12 11:04 | Return to Storage |
| MC16336-6.1 | Walk In Ref #9 | Michael Rolo | 12/06/12 09:27 | Retrieve from Storage |
| MC16336-6.1 | Michael Rolo | Walk In Ref #9 | 12/06/12 09:28 | Return to Storage |
| MC16336-6.1 | Walk In Ref #9 | Chris Cataldo | 12/08/12 10:33 | Retrieve from Storage |
| MC16336-6.1 | Chris Cataldo | Walk In Ref #9 | 12/08/12 21:09 | Return to Storage |
| MC16336-6.4 | VOC Ref #10 | Amy Min Yang | 12/07/12 14:05 | Retrieve from Storage |
| MC16336-6.4 | Amy Min Yang | GCMSM | 12/07/12 14:05 | Load on Instrument |
| MC16336-6.5 | VOC Ref #10 | Amy Min Yang | 12/10/12 16:25 | Retrieve from Storage |
| MC16336-6.5 | Amy Min Yang | GCMSM | 12/10/12 16:25 | Load on Instrument |
| MC16336-6.6 | VOC Ref #10 | Amy Min Yang | 12/10/12 16:25 | Retrieve from Storage |
| MC16336-6.6 | Amy Min Yang | GCMSM | 12/10/12 16:25 | Load on Instrument |
| MC16336-6.8 | VOC Ref #10 | Amy Min Yang | 12/07/12 14:05 | Retrieve from Storage |
| MC16336-6.8 | Amy Min Yang | GCMSM | 12/07/12 14:05 | Load on Instrument |
| MC16336-6.9 | VOC Ref #10 | Amy Min Yang | 12/07/12 14:05 | Retrieve from Storage |
| MC16336-6.9 | Amy Min Yang | GCMSM | 12/07/12 14:05 | Load on Instrument |
| MC16336-6.12 | VOC Ref #10 | Gary Krasinski | 11/30/12 11:40 | Retrieve from Storage |
| MC16336-6.12 | Gary Krasinski | VOC Ref #10 | 12/03/12 08:14 | Return to Storage |
| MC16336-7.1 | Walk In Ref #9 | Hamid Siamak | 12/03/12 08:10 | Retrieve from Storage |
| MC16336-7.1 | Hamid Siamak | Walk In Ref #9 | 12/03/12 11:04 | Return to Storage |
| MC16336-7.1 | Walk In Ref #9 | Michael Rolo | 12/06/12 09:27 | Retrieve from Storage |
| MC16336-7.1 | Michael Rolo | Walk In Ref #9 | 12/06/12 09:28 | Return to Storage |
| MC16336-7.4 | VOC Ref #10 | Gary Krasinski | 11/30/12 11:40 | Retrieve from Storage |
| MC16336-7.4 | Gary Krasinski | VOC Ref #10 | 12/03/12 10:10 | Return to Storage |
| MC16336-7.4 | VOC Ref #10 | Jaime Maslowski | 12/03/12 10:16 | Retrieve from Storage |
| MC16336-7.4 | Jaime Maslowski | VOC Ref #10 | 12/04/12 09:49 | Return to Storage |
| MC16336-8.1 | Walk In Ref #9 | Hamid Siamak | 12/03/12 08:10 | Retrieve from Storage |
| MC16336-8.1 | Hamid Siamak | Walk In Ref #9 | 12/03/12 11:04 | Return to Storage |
| MC16336-8.1 | Walk In Ref #9 | Michael Rolo | 12/06/12 09:27 | Retrieve from Storage |
| MC16336-8.1 | Michael Rolo | Walk In Ref #9 | 12/06/12 09:28 | Return to Storage |
| MC16336-8.1 | Walk In Ref #9 | Chris Cataldo | 12/08/12 10:33 | Retrieve from Storage |
| MC16336-8.1 | Chris Cataldo | Walk In Ref #9 | 12/08/12 21:09 | Return to Storage |
| MC16336-8.4 | VOC Ref #10 | Gary Krasinski | 11/30/12 11:40 | Retrieve from Storage |
| MC16336-8.4 | Gary Krasinski | VOC Ref #10 | 12/03/12 10:10 | Return to Storage |
| MC16336-8.4 | VOC Ref #10 | Jaime Maslowski | 12/03/12 10:16 | Retrieve from Storage |

# Accutest Internal Chain of Custody



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 11/29/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16336-8.4 | Jaime Maslowski | VOC Ref #10 | 12/04/12 09:49 | Return to Storage |

5.3

New England ACCUTEST LABORATORIES

## GC/MS Volatiles



## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4871-MB | G122498.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-2, MC16336-7, MC16336-8

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 63 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 500 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 1300 | 63 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 11 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 19 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 11 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 100 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 26 | ng/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 63 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 9.2 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 11 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 44 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 8.2 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 36 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 14 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 63 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 100 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 26 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 23 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 55 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 11 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 15 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 57 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 14 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 14 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 18 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 15 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 19 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 12 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 43 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 13 | ug/kg | |

# Method Blank Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4871-MB | G122498.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-2, MC16336-7, MC16336-8

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 8.5 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 25 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 34 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 12 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 23 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 25 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 11 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.9 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 14 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 25 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 25 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 58 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 63 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 51 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 12 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 21 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 11 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 42 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 12 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 11 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 16 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 37 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 11 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 15 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 15 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 11 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 11 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 28 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 14 | ug/kg | |
| | m,p-Xylene | ND | 100 | 39 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 12 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 12 | ug/kg | |

# Method Blank Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4871-MB | G122498.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-2, MC16336-7, MC16336-8

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 105% | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/kg | |

6.1.1

# Method Blank Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1789-MB | M52763.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-1, MC16336-3



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 25 | 1.3 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.29 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.37 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 2.0 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.52 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.88 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.16 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.73 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.28 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 1.3 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 2.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.52 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.46 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.23 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.30 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.22 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.23 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.21 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.27 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.29 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.37 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.37 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.23 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.87 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.26 | ug/kg | |

# Method Blank Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1789-MB | M52763.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-1, MC16336-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 0.17 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.50 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.68 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.24 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 0.46 | ng/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 0.50 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.23 | ng/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.29 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.50 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.49 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 1.2 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 1.3 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 1.0 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.23 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.43 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.23 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.85 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorohenzene | ND | 5.0 | 0.24 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 0.23 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.31 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.73 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.21 | ng/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.30 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.29 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.22 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.21 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 0.56 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.27 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.79 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.24 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.24 | ug/kg | |

# Method Blank Summary

Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1789-MB | M52763.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-1, MC16336-3

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | 70-130% |
| 2037-26-5 | Toluene-D8 | 111% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 93% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| 16844-98-7 | Silanol, trimethyl-, propanoate | 7.66 | 170 | ug/kg | JN |
| | Total TIC, Volatile | | 170 | ug/kg | J |

# Method Blank Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1790-MB1 | M52763.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1790 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 25 | 1.3 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.29 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.37 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 2.0 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.52 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.88 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.16 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.73 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.28 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 1.3 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 2.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.52 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.46 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.23 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.30 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.22 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.23 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.21 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.27 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.29 | ng/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.37 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.37 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.23 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.87 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.26 | ug/kg | |

# Method Blank Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1790-MB1 | M52763.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1790 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 0.17 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.50 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.68 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.24 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 0.46 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 0.50 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.29 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.50 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.49 | ng/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 1.2 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 1.3 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 1.0 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.23 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.43 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.23 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.85 | ng/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 0.24 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 0.23 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.31 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.73 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.30 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.29 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.22 | ng/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.21 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 0.56 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.27 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.79 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.24 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.24 | ug/kg | |

# Method Blank Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1790-MB1 | M52763.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1790 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-6

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | 70-130% |
| 2037-26-5 | Toluene-D8 | 111% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 93% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/kg | |

# Method Blank Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV573-MB | V14074.D | 1 | 12/07/12 | AMY | n/a | n/a | MSV573 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 3.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.2 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.24 | ug/l | |
| 108-86-1 | Bromobeuzene | ND | 5.0 | 0.62 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.3 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.58 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.78 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.4 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.61 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.55 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.64 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.61 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.87 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.47 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.50 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 1.3 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.50 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.73 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.65 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.48 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.53 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.93 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.45 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.64 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.7 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.62 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.41 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.95 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.72 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.64 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 1.6 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.91 | ug/l | |

# Method Blank Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV573-MB | VI4074.D | 1 | 12/07/12 | AMY | n/a | n/a | MSV573 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.45 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.20 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 15 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.81 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.51 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 2.1 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.50 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.57 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.41 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (M1BK) | ND | 5.0 | 2.9 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.1 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.83 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.58 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.45 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.57 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.60 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.42 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.51 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.85 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.50 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.78 | ng/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.29 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.85 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.35 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.47 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.3 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.63 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.73 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.58 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.58 | ug/l | |

# Method Blank Summary

Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV573-MB | V14074.D | 1 | 12/07/12 | AMY | n/a | n/a | MSV573 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-4

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | 70-130% |
| 2037-26-5 | Toluene-D8 | 91% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

# Method Blank Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1790-MB | M52787.D | 1 | 12/10/12 | AMY | n/a | n/a | MSM1790 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-6MS, MC16336-6MSD

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 25 | 1.3 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.29 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.37 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 2.0 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.52 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.88 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.16 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.73 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.28 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 1.3 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 2.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.52 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.46 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.23 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.30 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.22 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.23 | ng/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.21 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.27 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.29 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.37 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.37 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.23 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.87 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.26 | ug/kg | |

# Method Blank Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1790-MB | M52787.D | 1 | 12/10/12 | AMY | n/a | n/a | MSM1790 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-6MS, MC16336-6MSD

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 0.17 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.50 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.68 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.24 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 0.46 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 0.50 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.29 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.50 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.49 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 1.2 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 1.3 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 1.0 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.23 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.43 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.23 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.85 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 0.24 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 0.23 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.31 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.73 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.30 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.29 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.22 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.21 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 0.56 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.27 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.79 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.24 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.24 | ug/kg | |

# Method Blank Summary

Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1790-MB | M52787.D | 1 | 12/10/12 | AMY | n/a | n/a | MSM1790 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-6MS, MC16336-6MSD

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | 70-130% |
| 2037-26-5 | Toluene-D8 | 114% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 89% | 70-130% |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4871-BS | G122495.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |
| MSG4871-BSD | G122496.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |



The QC reported here applics to the following samples: Method: SW846 8260B

MC16336-2, MC16336-7, MC16336-8

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 3140 | 126 | 2870 | 115 | 9 | 70-130/25 |
| 107-02-8 | Acrolein | 12500 | 4510 | 36* a | 4510 | 36* a | 0 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 2500 | 2550 | 102 | 2570 | 103 | 1 | 70-130/25 |
| 71-43-2 | Benzene | 2500 | 2640 | 106 | 2690 | 108 | 2 | 70-130/25 |
| 108-86-1 | Bromobenzene | 2500 | 2490 | 100 | 2500 | 100 | 0 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 2500 | 2720 | 109 | 2780 | 111 | 2 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 2500 | 2430 | 97 | 2470 | 99 | 2 | 70-130/25 |
| 75-25-2 | Bromoform | 2500 | 2110 | 84 | 2140 | 86 | 1 | 70-130/25 |
| 74-83-9 | Bromomethane | 2500 | 2650 | 106 | 2710 | 108 | 2 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 2850 | 114 | 2730 | 109 | 4 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 2500 | 2620 | 105 | 2630 | 105 | 0 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2800 | 112 | 2820 | 113 | 1 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2460 | 98 | 2930 | 117 | 17 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 2500 | 3070 | 123 | 3160 | 126 | 3 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2290 | 92 | 2350 | 94 | 3 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 2500 | 2710 | 108 | 2760 | 110 | 2 | 70-130/25 |
| 75-00-3 | Chloroethane | 2500 | 2870 | 115 | 2910 | 116 | 1 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 1500 | 60 | 1550 | 62 | 3 | 10-160/25 |
| 67-66-3 | Chloroform | 2500 | 2730 | 109 | 2780 | 111 | 2 | 70-130/25 |
| 74-87-3 | Chloromethane | 2500 | 3320 | 133* a | 3460 | 138* a | 4 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2790 | 112 | 2770 | 111 | 1 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2850 | 114 | 2960 | 118 | 4 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 2500 | 2320 | 93 | 2350 | 94 | 1 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2760 | 110 | 2750 | 110 | 0 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2740 | 110 | 2770 | 111 | 1 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2580 | 103 | 2590 | 104 | 0 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 2170 | 87 | 2240 | 90 | 3 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2940 | 118 | 2990 | 120 | 2 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2380 | 95 | 2430 | 97 | 2 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2840 | 114 | 2930 | 117 | 3 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2870 | 115 | 2920 | 117 | 2 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2750 | 110 | 2830 | 113 | 3 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2640 | 106 | 2690 | 108 | 2 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2490 | 100 | 2510 | 100 | 1 | 70-130/25 |
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2930 | 117 | 3040 | 122 | 4 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2620 | 105 | 2700 | 108 | 3 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4871-BS | G122495.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |
| MSG4871-BSD | G122496.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-2, MC16336-7, MC16336-8

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2500 | 100 | 2540 | 102 | 2 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2580 | 103 | 2590 | 104 | 0 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 12500 | 9930 | 79 | 9110 | 73 | 9 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2460 | 98 | 2420 | 97 | 2 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 2500 | 2570 | 103 | 2620 | 105 | 2 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2380 | 95 | 2420 | 97 | 2 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 2500 | 2400 | 96 | 2290 | 92 | 5 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 2500 | 2830 | 113 | 2860 | 114 | 1 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2670 | 107 | 2680 | 107 | 0 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2760 | 110 | 2780 | 111 | 1 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 1940 | 78 | 1930 | 77 | 1 | 70-130/25 |
| 74-95-3 | Methylene bromide | 2500 | 2470 | 99 | 2480 | 99 | 0 | 70-130/25 |
| 75-09-2 | Methylene chloride | 2500 | 2880 | 115 | 2930 | 117 | 2 | 70-130/25 |
| 91-20-3 | Naphthalene | 2500 | 3170 | 127 | 3170 | 127 | 0 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 2500 | 2830 | 113 | 2870 | 115 | 1 | 70-130/25 |
| 100-42-5 | Styrene | 2500 | 2460 | 98 | 2480 | 99 | 1 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2330 | 93 | 2370 | 95 | 2 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2680 | 107 | 2680 | 107 | 0 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 2500 | 2430 | 97 | 2480 | 99 | 2 | 70-130/25 |
| 108-88-3 | Toluene | 2500 | 2670 | 107 | 2700 | 108 | 1 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 3160 | 126 | 3150 | 126 | 0 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2730 | 109 | 2700 | 108 | 1 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2640 | 106 | 2730 | 109 | 3 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2490 | 100 | 2520 | 101 | 1 | 70-130/25 |
| 79-01-6 | Trichloroethene | 2500 | 2530 | 101 | 2570 | 103 | 2 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2630 | 105 | 2610 | 104 | 1 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2600 | 104 | 2620 | 105 | 1 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2530 | 101 | 2550 | 102 | 1 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2510 | 100 | 2530 | 101 | 1 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 2500 | 2910 | 116 | 2950 | 118 | 1 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 2500 | 2830 | 113 | 2880 | 115 | 2 | 70-130/25 |
| | m,p-Xylene | 5000 | 5300 | 106 | 5410 | 108 | 2 | 70-130/25 |
| 95-47-6 | o-Xylene | 2500 | 2710 | 108 | 2780 | 111 | 3 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 7500 | 8010 | 107 | 8190 | 109 | 2 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4871-BS | G122495.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |
| MSG4871-BSD | G122496.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-2, MC16336-7, MC16336-8

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 104% | 106% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 99% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | 99% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1789-BS | M52760.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |
| MSM1789-BSD | M52761.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-1, MC16336-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 31.0 | 62* a | 25.7 | 51* a | 19 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 132 | 53* a | 102 | 41* a | 26* a | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 44.7 | 89 | 45.4 | 91 | 2 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 50.4 | 101 | 49.6 | 99 | 2 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 46.1 | 92 | 43.4 | 87 | 6 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 46.6 | 93 | 43.9 | 88 | 6 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 48.4 | 97 | 45.2 | 90 | 7 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 45.6 | 91 | 41.9 | 84 | 8 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 50.5 | 101 | 49.6 | 99 | 2 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 41.8 | 84 | 36.0 | 72 | 15 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 51.3 | 103 | 51.0 | 102 | 1 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 49.7 | 99 | 49.3 | 99 | 1 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 49.3 | 99 | 48.2 | 96 | 2 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 55.9 | 112 | 55.7 | 111 | 0 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 55.5 | 111 | 55.4 | 111 | 0 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 46.3 | 93 | 44.7 | 89 | 4 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 52.4 | 105 | 52.9 | 106 | 1 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 48.8 | 98 | 43.5 | 87 | 11 | 10-160/25 |
| 67-66-3 | Chloroform | 50 | 48.3 | 97 | 47.1 | 94 | 3 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 56.9 | 114 | 56.5 | 113 | 1 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 45.5 | 91 | 43.8 | 88 | 4 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 46.6 | 93 | 43.5 | 87 | 7 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 45.6 | 91 | 43.3 | 87 | 5 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 43.3 | 87 | 41.1 | 82 | 5 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 45.3 | 91 | 42.2 | 84 | 7 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 44.8 | 90 | 42.3 | 85 | 6 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 53.3 | 107 | 56.3 | 113 | 5 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 49.8 | 100 | 48.4 | 97 | 3 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 45.1 | 90 | 41.4 | 83 | 9 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 57.0 | 114 | 58.0 | 116 | 2 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 48.2 | 96 | 46.7 | 93 | 3 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 51.4 | 103 | 50.6 | 101 | 2 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 48.1 | 96 | 45.8 | 92 | 5 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 45.4 | 91 | 41.1 | 82 | 10 | 70-130/25 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 54.1 | 108 | 52.9 | 106 | 2 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 55.3 | 111 | 55.7 | 111 | 1 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1789-BS | M52760.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |
| MSM1789-BSD | M52761.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-1, MC16336-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 45.6 | 91 | 43.2 | 86 | 5 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 47.9 | 96 | 44.2 | 88 | 8 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 261 | 104 | 238 | 95 | 9 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 52.1 | 104 | 46.6 | 93 | 11 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 50 | 51.1 | 102 | 50.7 | 101 | 1 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 52.7 | 105 | 53.1 | 106 | 1 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 56.1 | 112 | 47.7 | 95 | 16 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 49.3 | 99 | 48.2 | 96 | 2 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 52.4 | 105 | 52.2 | 104 | 0 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 42.5 | 85 | 38.1 | 76 | 11 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 54.3 | 109 | 46.0 | 92 | 17 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 47.0 | 94 | 43.4 | 87 | 8 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 44.7 | 89 | 43.4 | 87 | 3 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 55.3 | 111 | 48.8 | 98 | 12 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 48.4 | 97 | 47.0 | 94 | 3 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 49.3 | 99 | 46.8 | 94 | 5 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 47.6 | 95 | 46.0 | 92 | 3 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 45.7 | 91 | 39.2 | 78 | 15 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 54.2 | 108 | 55.5 | 111 | 2 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 53.5 | 107 | 52.3 | 105 | 2 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 45.8 | 92 | 41.8 | 84 | 9 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 46.3 | 93 | 43.0 | 86 | 7 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 54.5 | 109 | 52.9 | 106 | 3 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 46.1 | 92 | 42.5 | 85 | 8 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 53.1 | 106 | 53.0 | 106 | 0 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 56.8 | 114 | 58.2 | 116 | 2 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 47.6 | 95 | 41.8 | 84 | 13 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 48.9 | 98 | 47.5 | 95 | 3 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 49.5 | 99 | 47.7 | 95 | 4 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 36.4 | 73 | 30.1 | 60* a | 19 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 52.1 | 104 | 52.4 | 105 | 1 | 70-130/25 |
| | m,p-Xylene | 100 | 101 | 101 | 101 | 101 | 0 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 49.6 | 99 | 47.3 | 95 | 5 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 151 | 101 | 148 | 99 | 2 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1789-BS | M52760.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |
| MSM1789-BSD | M52761.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-1, MC16336-3

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 113% | 115% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 92% | 91% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

6.2.2

9

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1790-BS1 | M52760.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1790 |
| MSM1790-BSD1 | M52761.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1790 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-6

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 31.0 | 62* a | 25.7 | 51* a | 19 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 132 | 53* a | 102 | 41* a | 26* a | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 44.7 | 89 | 45.4 | 91 | 2 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 50.4 | 101 | 49.6 | 99 | 2 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 46.1 | 92 | 43.4 | 87 | 6 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 46.6 | 93 | 43.9 | 88 | 6 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 48.4 | 97 | 45.2 | 90 | 7 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 45.6 | 91 | 41.9 | 84 | 8 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 50.5 | 101 | 49.6 | 99 | 2 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 41.8 | 84 | 36.0 | 72 | 15 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 51.3 | 103 | 51.0 | 102 | 1 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 49.7 | 99 | 49.3 | 99 | 1 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 49.3 | 99 | 48.2 | 96 | 2 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 55.9 | 112 | 55.7 | 111 | 0 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 55.5 | 111 | 55.4 | 111 | 0 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 46.3 | 93 | 44.7 | 89 | 4 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 52.4 | 105 | 52.9 | 106 | 1 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 48.8 | 98 | 43.5 | 87 | 11 | 10-160/25 |
| 67-66-3 | Chloroform | 50 | 48.3 | 97 | 47.1 | 94 | 3 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 56.9 | 114 | 56.5 | 113 | 1 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 45.5 | 91 | 43.8 | 88 | 4 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 46.6 | 93 | 43.5 | 87 | 7 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 45.6 | 91 | 43.3 | 87 | 5 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 43.3 | 87 | 41.1 | 82 | 5 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 45.3 | 91 | 42.2 | 84 | 7 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 44.8 | 90 | 42.3 | 85 | 6 | 70-130/25 |
| 75-71-8 | Dichlorodiflnoromethane | 50 | 53.3 | 107 | 56.3 | 113 | 5 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 49.8 | 100 | 48.4 | 97 | 3 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 45.1 | 90 | 41.4 | 83 | 9 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 57.0 | 114 | 58.0 | 116 | 2 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 48.2 | 96 | 46.7 | 93 | 3 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 51.4 | 103 | 50.6 | 101 | 2 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 48.1 | 96 | 45.8 | 92 | 5 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 45.4 | 91 | 41.1 | 82 | 10 | 70-130/25 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 54.1 | 108 | 52.9 | 106 | 2 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 55.3 | 111 | 55.7 | 111 | 1 | 70-130/25 |

* = Outside of Control Limits.

6.2.3

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1790-BS1 | M52760.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1790 |
| MSM1790-BSD1 | M52761.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1790 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-6

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 45.6 | 91 | 43.2 | 86 | 5 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 47.9 | 96 | 44.2 | 88 | 8 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 261 | 104 | 238 | 95 | 9 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 52.1 | 104 | 46.6 | 93 | 11 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 50 | 51.1 | 102 | 50.7 | 101 | 1 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 52.7 | 105 | 53.1 | 106 | 1 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 56.1 | 112 | 47.7 | 95 | 16 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 49.3 | 99 | 48.2 | 96 | 2 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 52.4 | 105 | 52.2 | 104 | 0 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 42.5 | 85 | 38.1 | 76 | 11 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 54.3 | 109 | 46.0 | 92 | 17 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 47.0 | 94 | 43.4 | 87 | 8 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 44.7 | 89 | 43.4 | 87 | 3 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 55.3 | 111 | 48.8 | 98 | 12 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 48.4 | 97 | 47.0 | 94 | 3 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 49.3 | 99 | 46.8 | 94 | 5 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 47.6 | 95 | 46.0 | 92 | 3 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 45.7 | 91 | 39.2 | 78 | 15 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 54.2 | 108 | 55.5 | 111 | 2 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 53.5 | 107 | 52.3 | 105 | 2 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 45.8 | 92 | 41.8 | 84 | 9 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 46.3 | 93 | 43.0 | 86 | 7 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 54.5 | 109 | 52.9 | 106 | 3 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 46.1 | 92 | 42.5 | 85 | 8 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 53.1 | 106 | 53.0 | 106 | 0 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 56.8 | 114 | 58.2 | 116 | 2 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 47.6 | 95 | 41.8 | 84 | 13 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 48.9 | 98 | 47.5 | 95 | 3 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 49.5 | 99 | 47.7 | 95 | 4 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 36.4 | 73 | 30.1 | 60* a | 19 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 52.1 | 104 | 52.4 | 105 | 1 | 70-130/25 |
| | m,p-Xylene | 100 | 101 | 101 | 101 | 101 | 0 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 49.6 | 99 | 47.3 | 95 | 5 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 151 | 101 | 148 | 99 | 2 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1790-BS1 | M52760.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1790 |
| MSM1790-BSD1 | M52761.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1790 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-6

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 113% | 115% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 92% | 91% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV573-BS | V14071.D | 1 | 12/07/12 | AMY | n/a | n/a | MSV573 |
| MSV573-BSD | V14072.D | 1 | 12/07/12 | AMY | n/a | n/a | MSV573 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-4

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 73.0 | 146* a | 69.2 | 138* a | 5 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 132 | 53* a | 136 | 54* a | 3 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 47.5 | 95 | 50.0 | 100 | 5 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 51.1 | 102 | 53.3 | 107 | 4 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 53.4 | 107 | 55.3 | 111 | 3 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 52.1 | 104 | 54.1 | 108 | 4 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 44.0 | 88 | 45.7 | 91 | 4 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 42.3 | 85 | 43.6 | 87 | 3 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 44.6 | 89 | 46.5 | 93 | 4 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 62.6 | 125 | 61.2 | 122 | 2 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 53.0 | 106 | 55.2 | 110 | 4 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 49.7 | 99 | 52.0 | 104 | 5 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 48.5 | 97 | 50.4 | 101 | 4 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 46.4 | 93 | 48.9 | 98 | 5 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 44.4 | 89 | 46.3 | 93 | 4 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 48.6 | 97 | 50.6 | 101 | 4 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 48.3 | 97 | 50.1 | 100 | 4 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 15.8 | 32* a | 17.9 | 36* a | 12 | 70-130/25 |
| 67-66-3 | Chloroform | 50 | 49.4 | 99 | 51.8 | 104 | 5 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 46.9 | 94 | 49.1 | 98 | 5 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 48.4 | 97 | 50.3 | 101 | 4 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 49.9 | 100 | 51.8 | 104 | 4 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 43.6 | 87 | 45.0 | 90 | 3 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 49.4 | 99 | 51.2 | 102 | 4 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 49.9 | 100 | 51.6 | 103 | 3 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 51.0 | 102 | 52.9 | 106 | 4 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 39.7 | 79 | 41.4 | 83 | 4 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 51.8 | 104 | 54.3 | 109 | 5 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 50.0 | 100 | 50.7 | 101 | 1 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 51.6 | 103 | 54.1 | 108 | 5 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 50.2 | 100 | 52.1 | 104 | 4 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 49.1 | 98 | 51.8 | 104 | 5 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 50.4 | 101 | 52.0 | 104 | 3 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 50.8 | 102 | 52.3 | 105 | 3 | 70-130/25 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 58.2 | 116 | 60.8 | 122 | 4 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 50.0 | 100 | 52.7 | 105 | 5 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV573-BS | V14071.D | 1 | 12/07/12 | AMY | n/a | n/a | MSV573 |
| MSV573-BSD | V14072.D | 1 | 12/07/12 | AMY | n/a | n/a | MSV573 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-4

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 43.2 | 86 | 44.7 | 89 | 3 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 44.8 | 90 | 46.2 | 92 | 3 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 243 | 97 | 250 | 100 | 3 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 46.4 | 93 | 47.4 | 95 | 2 | 77-137/25 |
| 100-41-4 | Ethylbenzene | 50 | 52.9 | 106 | 55.4 | 111 | 5 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 51.8 | 104 | 55.0 | 110 | 6 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 59.1 | 118 | 57.3 | 115 | 3 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 49.9 | 100 | 52.1 | 104 | 4 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 55.3 | 111 | 57.5 | 115 | 4 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 50.7 | 101 | 52.9 | 106 | 4 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 48.1 | 96 | 49.2 | 98 | 2 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 49.8 | 100 | 50.9 | 102 | 2 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 49.1 | 98 | 50.8 | 102 | 3 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 50.8 | 102 | 54.3 | 109 | 7 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 50.1 | 100 | 52.1 | 104 | 4 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 55.1 | 110 | 57.3 | 115 | 4 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 46.8 | 94 | 48.0 | 96 | 3 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 52.3 | 105 | 53.4 | 107 | 2 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 49.8 | 100 | 52.7 | 105 | 6 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 50.7 | 101 | 52.7 | 105 | 4 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 52.7 | 105 | 57.0 | 114 | 8 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 53.9 | 108 | 56.4 | 113 | 5 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 45.8 | 92 | 48.1 | 96 | 5 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 47.7 | 95 | 48.8 | 98 | 2 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 48.6 | 97 | 50.8 | 102 | 4 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 44.6 | 89 | 45.9 | 92 | 3 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 54.9 | 110 | 56.5 | 113 | 3 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 52.2 | 104 | 54.1 | 108 | 4 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 51.2 | 102 | 53.3 | 107 | 4 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 47.5 | 95 | 49.1 | 98 | 3 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 40.4 | 81 | 42.3 | 85 | 5 | 70-130/25 |
| | m,p-Xylene | 100 | 105 | 105 | 110 | 110 | 5 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 53.0 | 106 | 55.5 | 111 | 5 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 158 | 105 | 165 | 110 | 4 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV573-BS | V14071.D | 1 | 12/07/12 | AMY | n/a | n/a | MSV573 |
| MSV573-BSD | V14072.D | 1 | 12/07/12 | AMY | n/a | n/a | MSV573 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-4

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 91% | 91% | 70-130% |
| 2037-26-5 | Toluene-D8 | 92% | 91% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | 97% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16254-4MS | G122512.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |
| MC16254-4MSD | G122513.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |
| MC16254-4 | G122500.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-2, MC16336-7, MC16336-8

| CAS No. | Compound | MC16254-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 2680 | 1990 | 74 | 1900 | 71 | 5 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 13400 | 4330 | 32* [a] | 4260 | 32* [a] | 2 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 2680 | 2430 | 91 | 2410 | 90 | 1 | 70-130/30 |
| 71-43-2 | Benzene | 2820 | | 2680 | 5090 | 85 | 5100 | 85 | 0 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 2680 | 2500 | 93 | 2510 | 94 | 0 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 2680 | 2690 | 100 | 2760 | 103 | 3 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 2680 | 2400 | 90 | 2430 | 91 | 1 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 2680 | 2000 | 75 | 2030 | 76 | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 2680 | 2630 | 98 | 2530 | 94 | 4 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 2680 | 2260 | 84 | 2130 | 79 | 6 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | 107 | | 2680 | 2680 | 96 | 2710 | 97 | 1 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | 59.2 | | 2680 | 2860 | 105 | 2870 | 105 | 0 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 2680 | 3060 | 114 | 3090 | 115 | 1 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 2680 | 3010 | 112 | 2970 | 111 | 1 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 2680 | 2290 | 85 | 2350 | 88 | 3 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 2680 | 2660 | 99 | 2720 | 101 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 2680 | 2840 | 106 | 2740 | 102 | 4 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 2680 | 1430 | 53 | 1430 | 53 | 0 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 2680 | 2720 | 101 | 2730 | 102 | 0 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 2680 | 3370 | 126 | 3220 | 120 | 5 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 2680 | 2730 | 102 | 2850 | 106 | 4 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 2680 | 2930 | 109 | 2890 | 108 | 1 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 2680 | 2200 | 82 | 2270 | 85 | 3 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 2680 | 2720 | 101 | 2710 | 101 | 0 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 2680 | 2710 | 101 | 2750 | 103 | 1 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 2680 | 2560 | 96 | 2570 | 96 | 0 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 2680 | 2040 | 76 | 1980 | 74 | 3 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 2680 | 2930 | 109 | 2950 | 110 | 1 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 2680 | 2410 | 90 | 2400 | 90 | 0 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 2680 | 2830 | 106 | 2740 | 102 | 3 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 2680 | 2860 | 107 | 2860 | 107 | 0 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 2680 | 2770 | 103 | 2780 | 104 | 0 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 2680 | 2640 | 99 | 2620 | 98 | 1 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 2680 | 2380 | 89 | 2400 | 90 | 1 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 2680 | 2750 | 103 | 2790 | 104 | 1 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 2680 | 2600 | 97 | 2590 | 97 | 0 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16254-4MS | G122512.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |
| MC16254-4MSD | G122513.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |
| MC16254-4 | G122500.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-2, MC16336-7, MC16336-8

| CAS No. | Compound | MC16254-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 2680 | 2430 | 91 | 2440 | 91 | 0 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 2680 | 2470 | 92 | 2470 | 92 | 0 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 13400 | 7600 | 57* [a] | 8740 | 65* [a] | 14 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 2680 | 2360 | 88 | 2360 | 88 | 0 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 1690 | | 2680 | 4180 | 93 | 4280 | 97 | 2 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 2680 | 2270 | 85 | 2300 | 86 | 1 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 2680 | 2030 | 76 | 2010 | 75 | 1 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | 210 | | 2680 | 3100 | 108 | 3090 | 107 | 0 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | 49.7 | | 2680 | 2720 | 100 | 2710 | 99 | 0 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 2680 | 2670 | 100 | 2670 | 100 | 0 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 2680 | 1860 | 69* [a] | 1830 | 68* [a] | 2 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 2680 | 2440 | 91 | 2420 | 90 | 1 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 2680 | 2850 | 106 | 2840 | 106 | 0 | 70-130/30 |
| 91-20-3 | Naphthalene | 215 | | 2680 | 3230 | 113 | 3240 | 113 | 0 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 344 | | 2680 | 3230 | 108 | 3250 | 108 | 1 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 2680 | 2390 | 89 | 2460 | 92 | 3 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 2680 | 2240 | 84 | 2340 | 87 | 4 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 2680 | 2620 | 98 | 2600 | 97 | 1 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 2680 | 2380 | 89 | 2410 | 90 | 1 | 70-130/30 |
| 108-88-3 | Tolnene | 303 | | 2680 | 2950 | 99 | 2950 | 99 | 0 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 2680 | 2920 | 109 | 2970 | 111 | 2 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 2680 | 2580 | 96 | 2610 | 97 | 1 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 2680 | 2690 | 100 | 2780 | 104 | 3 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 2680 | 2430 | 91 | 2430 | 91 | 0 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 2680 | 2540 | 95 | 2530 | 94 | 0 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 2680 | 2480 | 93 | 2530 | 94 | 2 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 2680 | 2540 | 95 | 2510 | 94 | 1 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 745 | | 2680 | 3310 | 96 | 3370 | 98 | 2 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1400 | | 2680 | 2800 | 52* [a] | 2770 | 51* [a] | 1 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 2680 | 2710 | 101 | 2690 | 100 | 1 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 2680 | 2400 | 90 | 2090 | 78 | 14 | 70-130/30 |
| | m,p-Xylene | 4070 | | 5360 | 9170 | 95 | 9450 | 100 | 3 | 70-130/30 |
| 95-47-6 | o-Xylene | 422 | | 2680 | 3050 | 98 | 3120 | 101 | 2 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 4490 | | 8040 | 12200 | 96 | 12600 | 101 | 3 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16254-4MS | G122512.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |
| MC16254-4MSD | G122513.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |
| MC16254-4 | G122500.D | 1 | 12/03/12 | JM | n/a | n/a | MSG4871 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-2, MC16336-7, MC16336-8

| CAS No. | Surrogate Recoveries | MS | MSD | MC16254-4 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 102% | 102% | 98% | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | 95% | 92% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | 97% | 90% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16419-1MS | V14078.D | 5 | 12/07/12 | AMY | n/a | n/a | MSV573 |
| MC16419-1MSD | V14079.D | 5 | 12/07/12 | AMY | n/a | n/a | MSV573 |
| MC16419-1 | V14075.D | 1 | 12/07/12 | AMY | n/a | n/a | MSV573 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-4

| CAS No. | Compound | MC16419-1 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 250 | 237 | 95 | 205 | 82 | 14 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 1250 | 622 | 50* [a] | 600 | 48* [a] | 4 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 250 | 265 | 106 | 250 | 100 | 6 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 250 | 268 | 107 | 260 | 104 | 3 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 250 | 274 | 110 | 267 | 107 | 3 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 250 | 271 | 108 | 262 | 105 | 3 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 250 | 226 | 90 | 222 | 89 | 2 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 250 | 215 | 86 | 213 | 85 | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 250 | 244 | 98 | 234 | 94 | 4 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 250 | 254 | 102 | 248 | 99 | 2 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 250 | 279 | 112 | 270 | 108 | 3 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 250 | 265 | 106 | 255 | 102 | 4 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 250 | 256 | 102 | 246 | 98 | 4 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 250 | 253 | 101 | 244 | 98 | 4 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 250 | 245 | 98 | 241 | 96 | 2 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 250 | 254 | 102 | 246 | 98 | 3 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 250 | 271 | 108 | 256 | 102 | 6 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 250 | ND | 0* [a] | ND | 0* [a] | nc | 70-130/30 |
| 67-66-3 | Chloroform | 0.88 | | 250 | 261 | 104 | 248 | 99 | 5 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 250 | 253 | 101 | 244 | 98 | 4 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 250 | 252 | 101 | 242 | 97 | 4 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 250 | 260 | 104 | 251 | 100 | 4 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 250 | 226 | 90 | 222 | 89 | 2 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 250 | 252 | 101 | 249 | 100 | 1 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 250 | 256 | 102 | 248 | 99 | 3 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorohenzene | ND | | 250 | 264 | 106 | 257 | 103 | 3 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 250 | 242 | 97 | 236 | 94 | 3 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 250 | 272 | 109 | 262 | 105 | 4 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 250 | 261 | 104 | 254 | 102 | 3 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 250 | 290 | 116 | 276 | 110 | 5 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 250 | 263 | 105 | 253 | 101 | 4 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 250 | 264 | 106 | 250 | 100 | 5 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 250 | 261 | 104 | 255 | 102 | 2 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 250 | 262 | 105 | 254 | 102 | 3 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 250 | 304 | 122 | 297 | 119 | 2 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 250 | 279 | 112 | 268 | 107 | 4 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16419-1MS | V14078.D | 5 | 12/07/12 | AMY | n/a | n/a | MSV573 |
| MC16419-1MSD | V14079.D | 5 | 12/07/12 | AMY | n/a | n/a | MSV573 |
| MC16419-1 | V14075.D | 1 | 12/07/12 | AMY | n/a | n/a | MSV573 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-4

| CAS No. | Compound | MC16419-1 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 250 | 219 | 88 | 215 | 86 | 2 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 250 | 228 | 91 | 226 | 90 | 1 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 1250 | 1220 | 98 | 1230 | 98 | 1 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 250 | 235 | 94 | 230 | 92 | 2 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 250 | 280 | 112 | 270 | 108 | 4 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 250 | 266 | 106 | 270 | 108 | 1 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 250 | 245 | 98 | 237 | 95 | 3 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 250 | 266 | 106 | 254 | 102 | 5 | 70-130/30 |
| 99-87-6 | p-Isopropyltolnene | ND | | 250 | 290 | 116 | 280 | 112 | 4 | 70-130/30 |
| 1634-04-4 | Methyl Tert Bntyl Ether | ND | | 250 | 259 | 104 | 254 | 102 | 2 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 250 | 244 | 98 | 236 | 94 | 3 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 250 | 258 | 103 | 254 | 102 | 2 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 250 | 257 | 103 | 247 | 99 | 4 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 250 | 222 | 89 | 256 | 102 | 14 | 70-130/30 |
| 103-65-1 | n-Propylhenzene | ND | | 250 | 264 | 106 | 255 | 102 | 3 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 250 | 284 | 114 | 276 | 110 | 3 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 250 | 243 | 97 | 236 | 94 | 3 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 250 | 271 | 108 | 262 | 105 | 3 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | 0.49 | | 250 | 275 | 110 | 266 | 106 | 3 | 70-130/30 |
| 108-88-3 | Tolnene | ND | | 250 | 265 | 106 | 258 | 103 | 3 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 250 | 226 | 90 | 266 | 106 | 16 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 250 | 251 | 100 | 269 | 108 | 7 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 250 | 246 | 98 | 239 | 96 | 3 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 250 | 249 | 100 | 242 | 97 | 3 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 250 | 259 | 104 | 251 | 100 | 3 | 70-130/30 |
| 75-69-4 | Trichloroflnoromethane | ND | | 250 | 267 | 107 | 255 | 102 | 5 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 250 | 261 | 104 | 271 | 108 | 4 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 250 | 268 | 107 | 259 | 104 | 3 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 250 | 267 | 107 | 257 | 103 | 4 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 250 | 245 | 98 | 236 | 94 | 4 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 250 | 228 | 91 | 220 | 88 | 4 | 70-130/30 |
| | m,p-Xylene | ND | | 500 | 548 | 110 | 527 | 105 | 4 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 250 | 276 | 110 | 267 | 107 | 3 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 750 | 824 | 110 | 794 | 106 | 4 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16419-1MS | V14078.D | 5 | 12/07/12 | AMY | n/a | n/a | MSV573 |
| MC16419-1MSD | V14079.D | 5 | 12/07/12 | AMY | n/a | n/a | MSV573 |
| MC16419-1 | V14075.D | 1 | 12/07/12 | AMY | n/a | n/a | MSV573 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-4

| CAS No. | Surrogate Recoveries | MS | MSD | MC16419-1 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromoflnoromethane | 92% | 92% | 85% | 70-130% |
| 2037-26-5 | Toluene-D8 | 92% | 93% | 90% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | 98% | 96% | 70-130% |

(a) Ontside control limits due to possible matrix interference. Refer to Blank Spike.

6.3.2

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* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16366-7MS | M52775.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |
| MC16366-7MSD | M52776.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |
| MC16366-7 | M52774.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-1, MC16336-3

| CAS No. | Compound | MC16366-7 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 44.1 | 66.9 | 152* [a] | 68.3 | 171* [a] | 2 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 221 | 108 | 49* [a] | 113 | 57* [a] | 5 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 44.1 | 39.2 | 89 | 40.2 | 101 | 3 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 44.1 | 43.2 | 98 | 39.9 | 100 | 8 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 44.1 | 35.8 | 81 | 35.4 | 89 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 44.1 | 46.0 | 104 | 41.3 | 103 | 11 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 44.1 | 42.2 | 96 | 41.1 | 103 | 3 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 44.1 | 42.2 | 96 | 39.0 | 98 | 8 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 44.1 | 44.0 | 100 | 37.8 | 95 | 15 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 44.1 | 49.6 | 112 | 59.5 | 149* [a] | 18 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 44.1 | 22.0 | 50* [a] | 21.2 | 53* [a] | 4 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 44.1 | 25.1 | 57* [a] | 25.0 | 63* [a] | 0 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 44.1 | 27.6 | 63* [a] | 28.5 | 71 | 3 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 44.1 | 41.1 | 93 | 37.6 | 94 | 9 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 44.1 | 42.9 | 97 | 39.8 | 100 | 7 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 44.1 | 36.8 | 83 | 35.3 | 88 | 4 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 44.1 | 42.9 | 97 | 36.6 | 92 | 16 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 44.1 | 33.5 | 76 | 23.5 | 59 | 35* [b] | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 44.1 | 44.9 | 102 | 40.4 | 101 | 11 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 44.1 | 48.7 | 110 | 42.5 | 106 | 14 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 44.1 | 31.1 | 70 | 30.3 | 76 | 3 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 44.1 | 32.1 | 73 | 30.7 | 77 | 4 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 44.1 | 43.2 | 98 | 40.9 | 102 | 5 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 44.1 | 29.9 | 68* [a] | 29.2 | 73 | 2 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 44.1 | 29.9 | 68* [a] | 29.0 | 73 | 3 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 44.1 | 31.0 | 70 | 29.6 | 74 | 5 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 44.1 | 46.0 | 104 | 38.9 | 97 | 17 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 44.1 | 44.8 | 101 | 39.3 | 98 | 13 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 44.1 | 42.5 | 96 | 39.9 | 100 | 6 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 44.1 | 44.9 | 102 | 40.0 | 100 | 12 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 44.1 | 42.8 | 97 | 39.8 | 100 | 7 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 44.1 | 41.7 | 94 | 38.1 | 95 | 9 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 44.1 | 41.9 | 95 | 39.9 | 100 | 5 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 44.1 | 42.3 | 96 | 40.0 | 100 | 6 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 44.1 | 44.0 | 100 | 39.0 | 98 | 12 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 44.1 | 41.3 | 94 | 40.6 | 102 | 2 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16366-7MS | M52775.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |
| MC16366-7MSD | M52776.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |
| MC16366-7 | M52774.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-1, MC16336-3

| CAS No. | Compound | MC16366-7 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 44.1 | 39.8 | 90 | 38.6 | 97 | 3 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 44.1 | 42.8 | 97 | 40.5 | 101 | 6 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 221 | 251 | 114 | 229 | 115 | 9 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 44.1 | 44.8 | 101 | 38.7 | 97 | 15 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 44.1 | 37.4 | 85 | 37.7 | 94 | 1 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 44.1 | 13.5 | 31* [a] | 12.1 | 30* [a] | 11 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 44.1 | 60.6 | 137* [a] | 60.7 | 152* [a] | 0 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 44.1 | 32.0 | 72 | 33.1 | 83 | 3 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 44.1 | 27.7 | 63* [a] | 27.2 | 68* [a] | 2 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 44.1 | 32.0 | 72 | 37.6 | 94 | 16 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 44.1 | 45.0 | 102 | 42.0 | 105 | 7 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 44.1 | 43.6 | 99 | 40.9 | 102 | 6 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 44.1 | 42.1 | 95 | 37.7 | 94 | 11 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 44.1 | 26.2 | 59* [a] | 28.9 | 72 | 10 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 44.1 | 29.3 | 66* [a] | 29.7 | 74 | 1 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 44.1 | 38.4 | 87 | 36.6 | 92 | 5 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 44.1 | 40.0 | 91 | 39.9 | 100 | 0 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 44.1 | 42.2 | 96 | 37.8 | 95 | 11 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 44.1 | 38.2 | 87 | 38.6 | 97 | 1 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 44.1 | 43.2 | 98 | 40.1 | 100 | 7 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 44.1 | 21.4 | 48* [a] | 20.0 | 50* [a] | 7 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 44.1 | 21.9 | 50* [a] | 20.5 | 51* [a] | 7 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 44.1 | 42.5 | 96 | 40.2 | 101 | 6 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 44.1 | 44.2 | 100 | 39.8 | 100 | 10 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 44.1 | 42.2 | 96 | 39.9 | 100 | 6 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 44.1 | 43.0 | 97 | 39.0 | 98 | 10 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 44.1 | 42.6 | 96 | 38.7 | 97 | 10 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 44.1 | 31.0 | 70 | 31.4 | 79 | 1 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 44.1 | 30.7 | 70 | 31.2 | 78 | 2 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 44.1 | 24.9 | 56* [a] | 17.5 | 44* [a] | 35* [b] | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 44.1 | 42.6 | 96 | 36.7 | 92 | 15 | 70-130/30 |
| | m,p-Xylene | ND | | 88.3 | 74.3 | 84 | 73.7 | 92 | 1 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 44.1 | 37.9 | 86 | 36.4 | 91 | 4 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 132 | 112 | 85 | 110 | 92 | 2 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16366-7MS | M52775.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |
| MC16366-7MSD | M52776.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |
| MC16366-7 | M52774.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1789 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-1, MC16336-3

| CAS No. | Surrogate Recoveries | MS | MSD | MC16366-7 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dihromofluoromethane | 98% | 96% | 97% | 70-130% |
| 2037-26-5 | Toluene-D8 | 116% | 112% | 111% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 96% | 91% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) High RPD due to possible matrix interference and/or sample non-homogeneity.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16336-6MS | M52805.D | 1 | 12/10/12 | AMY | n/a | n/a | MSM1790 |
| MC16336-6MSD | M52806.D | 1 | 12/10/12 | AMY | n/a | n/a | MSM1790 |
| MC16336-6 | M52769.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1790 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-6

| CAS No. | Compound | MC16336-6 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 65.6 | 33.9 | 52* a | 56.4 | 66* a | 50* b | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 328 | 85.8 | 26* a | 165 | 39* a | 63* b | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 65.6 | 35.7 | 54* a | 72.4 | 85 | 68* b | 70-130/30 |
| 71-43-2 | Benzene | 0.41 | J | 65.6 | 37.8 | 57* a | 73.6 | 86 | 64* b | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 65.6 | 25.5 | 39* a | 71.2 | 84 | 95* b | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 65.6 | 42.7 | 65* a | 74.9 | 88 | 55* b | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 65.6 | 38.2 | 58* a | 73.9 | 87 | 64* b | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 65.6 | 40.4 | 62* a | 79.7 | 93 | 65* b | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 65.6 | 45.2 | 69* a | 71.1 | 83 | 45* b | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 65.6 | 24.3 | 37* a | 72.1 | 85 | 99* b | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 65.6 | 18.6 | 28* a | 61.8 | 72 | 107* b | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 65.6 | 19.0 | 29* a | 65.8 | 77 | 110* b | 70-130/30 |
| 98-06-6 | tert-Bntylbenzene | ND | | 65.6 | 18.5 | 28* a | 66.1 | 78 | 113* b | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 65.6 | 41.9 | 64* a | 78.0 | 91 | 60* b | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 65.6 | 32.8 | 50* a | 78.1 | 92 | 82* b | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 65.6 | 28.5 | 43* a | 71.5 | 84 | 86* b | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 65.6 | 40.2 | 61* a | 69.6 | 82 | 54* b | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 65.6 | ND | 0* a | 64.2 | 75 | 200* b | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 65.6 | 38.1 | 58* a | 71.9 | 84 | 61* b | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 65.6 | 49.4 | 75 | 78.3 | 92 | 45* b | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 65.6 | 20.5 | 31* a | 65.1 | 76 | 104* b | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 65.6 | 20.9 | 32* a | 64.7 | 76 | 102* b | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 65.6 | 39.2 | 60* a | 79.3 | 93 | 68* b | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 65.6 | 20.6 | 31* a | 62.5 | 73 | 101* b | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 65.6 | 20.3 | 31* a | 63.9 | 75 | 104* b | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 65.6 | 21.0 | 32* a | 64.1 | 75 | 101* b | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 65.6 | 34.7 | 53* a | 70.8 | 83 | 68* b | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 65.6 | 37.7 | 57* a | 71.9 | 84 | 62* b | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 65.6 | 38.7 | 59* a | 71.5 | 84 | 60* b | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 65.6 | 42.4 | 65* a | 82.0 | 96 | 64* b | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 65.6 | 39.7 | 61* a | 71.5 | 84 | 57* b | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 65.6 | 41.5 | 63* a | 74.9 | 88 | 57* b | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 65.6 | 34.0 | 52* a | 68.7 | 81 | 68* b | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 65.6 | 38.1 | 58* a | 74.4 | 87 | 65* b | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 65.6 | 33.9 | 52* a | 71.8 | 84 | 72* b | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 65.6 | 32.8 | 50* a | 78.9 | 93 | 83* b | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16336-6MS | M52805.D | 1 | 12/10/12 | AMY | n/a | n/a | MSM1790 |
| MC16336-6MSD | M52806.D | 1 | 12/10/12 | AMY | n/a | n/a | MSM1790 |
| MC16336-6 | M52769.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1790 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-6

| CAS No. | Compound | MC16336-6 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 65.6 | 34.7 | 53* a | 68.7 | 81 | 66* b | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 65.6 | 38.9 | 59* a | 76.2 | 89 | 65* b | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 328 | 282 | 86 | 531 | 125 | 61* b | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 65.6 | 33.6 | 51 | 81.5 | 96 | 83* b | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 65.6 | 25.5 | 39* a | 75.6 | 89 | 99* b | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 65.6 | 18.2 | 28* a | 62.8 | 74 | 110* b | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 65.6 | 41.6 | 63* a | 83.6 | 98 | 67* b | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 65.6 | 20.1 | 31* a | 70.6 | 83 | 111* b | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 65.6 | 20.4 | 31* a | 70.1 | 82 | 110* b | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 65.6 | 17.0 | 26* a | 65.2 | 76 | 117* b | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 65.6 | 43.0 | 66* a | 79.9 | 94 | 60* b | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 65.6 | 42.9 | 65* a | 76.6 | 90 | 56* b | 70-130/30 |
| 75-09-2 | Methylene chloride | 1.5 | J | 65.6 | 39.2 | 57* a | 69.1 | 79 | 55* b | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 65.6 | 16.2 | 25* a | 74.3 | 87 | 128* b | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 65.6 | 19.7 | 30* a | 65.9 | 77 | 108* b | 70-130/30 |
| 100-42-5 | Styrene | ND | | 65.6 | 26.8 | 41* a | 71.9 | 84 | 91* b | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 65.6 | 31.2 | 48* a | 74.7 | 88 | 82* b | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 65.6 | 37.8 | 58* a | 79.2 | 93 | 71* b | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 65.6 | 28.7 | 44* a | 82.8 | 97 | 97* b | 70-130/30 |
| 108-88-3 | Toluene | ND | | 65.6 | 31.7 | 48* a | 83.1 | 97 | 90* b | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 65.6 | 15.8 | 24* a | 55.1 | 65* a | 111* b | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 65.6 | 15.1 | 23* a | 53.7 | 63* a | 112* b | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 65.6 | 32.7 | 50* a | 74.3 | 87 | 78* b | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 65.6 | 39.5 | 60* a | 76.8 | 90 | 64* b | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 65.6 | 35.6 | 54* a | 76.6 | 90 | 73* b | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 65.6 | 35.3 | 54* a | 78.4 | 92 | 76* b | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 65.6 | 36.6 | 56* a | 82.0 | 96 | 77* b | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 65.6 | 19.9 | 30* a | 67.2 | 79 | 109* b | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 65.6 | 20.0 | 30* a | 67.5 | 79 | 109* b | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 65.6 | 19.3 | 29* a | 41.1 | 48* a | 72* b | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 65.6 | 45.1 | 69* a | 70.6 | 83 | 44* b | 70-130/30 |
| | m,p-Xylene | ND | | 131 | 49.7 | 38* a | 150 | 88 | 100* b | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 65.6 | 23.9 | 36* a | 72.4 | 85 | 101* b | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 197 | 73.5 | 37* a | 223 | 87 | 101* b | 70-130/30 |

* = Outside of Control Limits.

6.3.4

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16336-6MS | M52805.D | 1 | 12/10/12 | AMY | n/a | n/a | MSM1790 |
| MC16336-6MSD | M52806.D | 1 | 12/10/12 | AMY | n/a | n/a | MSM1790 |
| MC16336-6 | M52769.D | 1 | 12/07/12 | AMY | n/a | n/a | MSM1790 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16336-6

| CAS No. | Surrogate Recoveries | MS | MSD | MC16336-6 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 97% | 96% | 98% | 70-130% |
| 2037-26-5 | Toluene-D8 | 115% | 116% | 121% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 91% | 93% | 94% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) High RPD due to possible matrix interference and/or sample non-homogeneity.

* = Outside of Control Limits.

# Volatile Internal Standard Area Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSG4871-CC4851 | Injection Date: | 12/03/12 |
| Lab File ID: | G122495.D | Injection Time: | 09:15 |
| Instrument ID: | GCMSG | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 308671 | 5.13 | 407327 | 6.27 | 193100 | 9.62 | 241063 | 12.25 | 56399 | 3.10 |
| Upper Limit [a] | 617342 | 5.63 | 814654 | 6.77 | 386200 | 10.12 | 482126 | 12.75 | 112798 | 3.60 |
| Lower Limit [b] | 154336 | 4.63 | 203664 | 5.77 | 96550 | 9.12 | 120532 | 11.75 | 28200 | 2.60 |

| Lab Sample ID | IS 1 AREA | RT | 1S 2 AREA | RT | IS 3 AREA | RT | 1S 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| MSG4871-BS | 308671 | 5.13 | 407327 | 6.27 | 193100 | 9.62 | 241063 | 12.25 | 56399 | 3.10 |
| MSG4871-BSD | 307124 | 5.13 | 406417 | 6.27 | 191786 | 9.62 | 242604 | 12.25 | 55986 | 3.10 |
| MSG4871-MB | 314091 | 5.13 | 414409 | 6.27 | 193830 | 9.62 | 243336 | 12.25 | 55020 | 3.10 |
| ZZZZZZ | 313760 | 5.13 | 414526 | 6.27 | 191762 | 9.62 | 240316 | 12.25 | 54583 | 3.10 |
| MC16254-4 | 315126 | 5.13 | 414313 | 6.27 | 194803 | 9.62 | 243801 | 12.25 | 53307 | 3.09 |
| ZZZZZZ | 313903 | 5.13 | 414188 | 6.27 | 193242 | 9.62 | 241080 | 12.25 | 54644 | 3.10 |
| ZZZZZZ | 312873 | 5.13 | 413193 | 6.27 | 235288 | 9.62 | 247584 | 12.25 | 64334 | 3.09 |
| ZZZZZZ | 293684 | 5.13 | 394490 | 6.27 | 195244 | 9.62 | 253591 | 12.26 | 64831 | 3.10 |
| ZZZZZZ | 306434 | 5.13 | 411965 | 6.27 | 195461 | 9.62 | 246409 | 12.25 | 59624 | 3.10 |
| ZZZZZZ | 309956 | 5.13 | 410617 | 6.27 | 196186 | 9.62 | 244349 | 12.25 | 59514 | 3.10 |
| ZZZZZZ | 308723 | 5.13 | 408350 | 6.27 | 193830 | 9.62 | 243085 | 12.25 | 57300 | 3.10 |
| ZZZZZZ | 309534 | 5.13 | 409785 | 6.27 | 192976 | 9.62 | 244034 | 12.25 | 57206 | 3.10 |
| ZZZZZZ | 310220 | 5.13 | 407933 | 6.27 | 190929 | 9.62 | 244727 | 12.25 | 56966 | 3.10 |
| ZZZZZZ | 309233 | 5.13 | 406464 | 6.27 | 191976 | 9.62 | 244800 | 12.25 | 58061 | 3.10 |
| ZZZZZZ | 312717 | 5.13 | 412045 | 6.27 | 193033 | 9.62 | 241889 | 12.25 | 54087 | 3.10 |
| ZZZZZZ | 312429 | 5.13 | 407092 | 6.27 | 194688 | 9.62 | 241747 | 12.25 | 61040 | 3.10 |
| MC16254-4MS | 318825 | 5.13 | 421346 | 6.27 | 204051 | 9.62 | 245248 | 12.25 | 48937 | 3.09 |
| MC16254-4MSD | 312707 | 5.13 | 416412 | 6.27 | 197267 | 9.62 | 241675 | 12.25 | 41514 | 3.09 |
| MC16336-8 | 315479 | 5.13 | 415187 | 6.27 | 204249 | 9.62 | 243853 | 12.25 | 46008 | 3.09 |
| MC16336-2 | 316298 | 5.13 | 417645 | 6.27 | 199609 | 9.62 | 240850 | 12.25 | 41872 | 3.09 |
| MC16336-7 | 317824 | 5.13 | 421093 | 6.27 | 206545 | 9.62 | 242767 | 12.25 | 40407 | 3.09 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Diflnorohenzene
1S 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
1S 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1789-CC1784 | Injection Date: | 12/07/12 |
| Lab File ID: | M52759.D | Injection Time: | 10:00 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 224361 | 9.36 | 333914 | 10.24 | 180727 | 13.52 | 186240 | 16.08 | 53372 | 6.85 |
| Upper Limit [a] | 448722 | 9.86 | 667828 | 10.74 | 361454 | 14.02 | 372480 | 16.58 | 106744 | 7.35 |
| Lower Limit [b] | 112181 | 8.86 | 166957 | 9.74 | 90364 | 13.02 | 93120 | 15.58 | 26686 | 6.35 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1789-BS | 197602 | 9.36 | 297597 | 10.24 | 164760 | 13.52 | 173090 | 16.08 | 115690[c] | 6.86 |
| MSM1790-BS1 | 197602 | 9.36 | 297597 | 10.24 | 164760 | 13.52 | 173090 | 16.08 | 115690[c] | 6.86 |
| MSM1789-BSD | 197943 | 9.36 | 290654 | 10.24 | 163027 | 13.52 | 173324 | 16.09 | 113884[c] | 6.86 |
| MSM1790-BSD1 | 197943 | 9.36 | 290654 | 10.24 | 163027 | 13.52 | 173324 | 16.09 | 113884[c] | 6.86 |
| MSM1789-MB | 218855 | 9.36 | 318582 | 10.24 | 164232 | 13.52 | 178475 | 16.08 | 53571 | 6.86 |
| MSM1790-MB1 | 218855 | 9.36 | 318582 | 10.24 | 164232 | 13.52 | 178475 | 16.08 | 53571 | 6.86 |
| ZZZZZZ | 215596 | 9.36 | 318716 | 10.24 | 169416 | 13.52 | 178065 | 16.08 | 99113 | 6.86 |
| ZZZZZZ | 187518 | 9.36 | 278518 | 10.24 | 136525 | 13.52 | 108254 | 16.09 | 110765[c] | 6.86 |
| ZZZZZZ | 222360 | 9.36 | 333153 | 10.24 | 174525 | 13.52 | 188656 | 16.08 | 107675[c] | 6.86 |
| ZZZZZZ | 222549 | 9.36 | 324145 | 10.24 | 173399 | 13.52 | 185495 | 16.09 | 97147 | 6.85 |
| ZZZZZZ | 216455 | 9.36 | 309863 | 10.24 | 165881 | 13.52 | 178747 | 16.08 | 100563 | 6.86 |
| MC16336-6 | 147640 | 9.36 | 215463 | 10.24 | 116079 | 13.52 | 124690 | 16.09 | 53641 | 6.86 |
| MC16336-1 | 212230 | 9.36 | 314176 | 10.24 | 167456 | 13.52 | 184621 | 16.08 | 94743 | 6.86 |
| MC16336-3 | 211731 | 9.36 | 328875 | 10.24 | 170785 | 13.52 | 182730 | 16.08 | 92737 | 6.86 |
| MC16366-7 | 222265 | 9.36 | 324509 | 10.24 | 170505 | 13.52 | 181932 | 16.08 | 55970 | 6.86 |
| MC16366-7MS | 127437 | 9.36 | 185592 | 10.24 | 103069 | 13.52 | 107042 | 16.08 | 28963 | 6.86 |
| MC16366-7MSD | 228887 | 9.36 | 337534 | 10.24 | 180891 | 13.52 | 182992 | 16.08 | 49036 | 6.86 |
| ZZZZZZ | 216372 | 9.36 | 309196 | 10.24 | 164627 | 13.52 | 180201 | 16.08 | 50256 | 6.85 |
| ZZZZZZ | 218331 | 9.36 | 314140 | 10.24 | 169810 | 13.52 | 184840 | 16.08 | 57971 | 6.85 |
| ZZZZZZ | 210103 | 9.36 | 307525 | 10.24 | 166143 | 13.52 | 179079 | 16.08 | 54715 | 6.86 |
| ZZZZZZ | 176062 | 9.36 | 255202 | 10.24 | 98414 | 13.52 | 46863[d] | 16.09 | 89292 | 6.86 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits. Target analytes not associated with this internal standard.
(d) Outside control limits due to possible matrix interference. Confirmed hy reanalysis.

6.4.2

# Volatile Internal Standard Area Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1790-CC1784 | Injection Date: | 12/10/12 |
| Lab File ID: | M52783.D | Injection Time: | 09:07 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 238203 | 9.36 | 351350 | 10.24 | 188304 | 13.52 | 201447 | 16.08 | 56158 | 6.86 |
| Upper Limit [a] | 476406 | 9.86 | 702700 | 10.74 | 376608 | 14.02 | 402894 | 16.58 | 112316 | 7.36 |
| Lower Limit [b] | 119102 | 8.86 | 175675 | 9.74 | 94152 | 13.02 | 100724 | 15.58 | 28079 | 6.36 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1790-BS | 202143 | 9.36 | 305671 | 10.24 | 165223 | 13.52 | 177306 | 16.08 | 103866 | 6.86 |
| MSM1790-BSD | 196850 | 9.36 | 287275 | 10.24 | 153964 | 13.52 | 167848 | 16.08 | 114618[c] | 6.85 |
| MSM1790-MB | 219186 | 9.36 | 311017 | 10.24 | 161757 | 13.52 | 173222 | 16.08 | 44199 | 6.86 |
| ZZZZZZ | 225987 | 9.36 | 335180 | 10.24 | 171886 | 13.52 | 189019 | 16.08 | 83166 | 6.86 |
| ZZZZZZ | 221749 | 9.36 | 327625 | 10.24 | 167586 | 13.52 | 178279 | 16.08 | 97539 | 6.85 |
| ZZZZZZ | 213367 | 9.36 | 314946 | 10.24 | 159561 | 13.52 | 175775 | 16.08 | 82434 | 6.86 |
| ZZZZZZ | 227090 | 9.36 | 331981 | 10.24 | 175636 | 13.52 | 189112 | 16.09 | 59127 | 6.86 |
| ZZZZZZ | 217927 | 9.36 | 320614 | 10.24 | 161801 | 13.52 | 173162 | 16.08 | 99202 | 6.86 |
| ZZZZZZ | 224804 | 9.36 | 333999 | 10.24 | 170390 | 13.52 | 179149 | 16.09 | 79353 | 6.86 |
| ZZZZZZ | 216886 | 9.36 | 315905 | 10.24 | 162910 | 13.52 | 176918 | 16.08 | 81007 | 6.86 |
| ZZZZZZ | 224572 | 9.36 | 323616 | 10.24 | 164639 | 13.52 | 173919 | 16.08 | 45320 | 6.86 |
| ZZZZZZ | 161566 | 9.36 | 235652 | 10.24 | 120474 | 13.52 | 130862 | 16.09 | 42342 | 6.86 |
| ZZZZZZ | 217416 | 9.36 | 317648 | 10.24 | 161134 | 13.52 | 164975 | 16.09 | 43717 | 6.86 |
| ZZZZZZ | 224973 | 9.36 | 334350 | 10.24 | 169522 | 13.52 | 177963 | 16.08 | 44753 | 6.86 |
| ZZZZZZ | 215310 | 9.36 | 314528 | 10.25 | 164269 | 13.52 | 172606 | 16.08 | 34653 | 6.86 |
| ZZZZZZ | 196014 | 9.36 | 280258 | 10.24 | 109420 | 13.52 | 56092[d] | 16.09 | 92154 | 6.86 |
| ZZZZZZ | 223151 | 9.36 | 331919 | 10.24 | 167176 | 13.52 | 177902 | 16.09 | 45228 | 6.86 |
| ZZZZZZ | 220904 | 9.36 | 316861 | 10.24 | 162345 | 13.52 | 172525 | 16.08 | 51268 | 6.86 |
| ZZZZZZ | 221135 | 9.36 | 318991 | 10.24 | 162579 | 13.52 | 168336 | 16.08 | 51471 | 6.86 |
| ZZZZZZ | 216521 | 9.36 | 314546 | 10.24 | 160701 | 13.52 | 163838 | 16.09 | 41020 | 6.86 |
| MC16336-6MS | 62655[e] | 9.36 | 90748[e] | 10.24 | 48977[e] | 13.53 | 52679[e] | 16.08 | 15350[c] | 6.87 |
| MC16336-6MSD | 217890 | 9.36 | 311182 | 10.24 | 175626 | 13.52 | 182168 | 16.08 | 97433 | 6.86 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits. Target analytes not associated with this internal standard.
(d) Outside control limits due to possible matrix interference. Confirmed by reanalysis.
(e) Outside control limits due to possible matrix interference. Confirmed by MS/MSD.

6.4.3

# Volatile Internal Standard Area Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV573-CC568 | Injection Date: | 12/07/12 |
| Lab File ID: | V14070.D | Injection Time: | 12:07 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 369670 | 6.51 | 660479 | 7.71 | 364202 | 11.07 | 304615 | 13.31 | 84780 | 3.48 |
| Upper Limit [a] | 739340 | 7.01 | 1320958 | 8.21 | 728404 | 11.57 | 609230 | 13.81 | 169560 | 3.98 |
| Lower Limit [b] | 184835 | 6.01 | 330240 | 7.21 | 182101 | 10.57 | 152308 | 12.81 | 42390 | 2.98 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSV573-BS | 371768 | 6.51 | 663505 | 7.71 | 372259 | 11.07 | 309505 | 13.30 | 99854 | 3.47 |
| MSV573-BSD | 372081 | 6.52 | 670244 | 7.71 | 374338 | 11.07 | 311844 | 13.30 | 102556 | 3.48 |
| MSV573-MB | 361879 | 6.52 | 649544 | 7.71 | 355614 | 11.07 | 289160 | 13.30 | 91012 | 3.48 |
| MC16419-1 | 356622 | 6.52 | 640015 | 7.71 | 351578 | 11.07 | 285546 | 13.30 | 87283 | 3.48 |
| ZZZZZZ | 351776 | 6.52 | 634120 | 7.71 | 346940 | 11.07 | 280556 | 13.30 | 85857 | 3.48 |
| ZZZZZZ | 347637 | 6.52 | 626260 | 7.71 | 343812 | 11.07 | 276321 | 13.30 | 86028 | 3.48 |
| MC16419-1MS | 351171 | 6.52 | 628036 | 7.71 | 351880 | 11.07 | 292035 | 13.30 | 90258 | 3.48 |
| MC16419-1MSD | 355615 | 6.52 | 629896 | 7.71 | 355817 | 11.07 | 295874 | 13.30 | 90383 | 3.48 |
| ZZZZZZ | 349750 | 6.52 | 629453 | 7.71 | 344943 | 11.07 | 279303 | 13.30 | 90371 | 3.48 |
| ZZZZZZ | 347191 | 6.52 | 625444 | 7.71 | 343000 | 11.07 | 274067 | 13.31 | 85447 | 3.48 |
| ZZZZZZ | 344260 | 6.52 | 619570 | 7.71 | 340476 | 11.07 | 274856 | 13.30 | 84705 | 3.48 |
| ZZZZZZ | 334267 | 6.52 | 607417 | 7.71 | 333166 | 11.07 | 268923 | 13.30 | 77339 | 3.48 |
| MC16336-4 | 337270 | 6.52 | 605668 | 7.71 | 331199 | 11.07 | 267994 | 13.31 | 81208 | 3.48 |
| ZZZZZZ | 332338 | 6.51 | 600466 | 7.71 | 329076 | 11.07 | 264984 | 13.30 | 78286 | 3.47 |
| ZZZZZZ | 329706 | 6.52 | 593578 | 7.71 | 324155 | 11.07 | 259853 | 13.30 | 75371 | 3.47 |
| ZZZZZZ | 326953 | 6.52 | 591718 | 7.71 | 320303 | 11.07 | 259929 | 13.31 | 76356 | 3.48 |
| ZZZZZZ | 322164 | 6.52 | 585802 | 7.71 | 319190 | 11.07 | 256861 | 13.30 | 72711 | 3.48 |
| ZZZZZZ | 321086 | 6.52 | 579647 | 7.71 | 317967 | 11.07 | 257711 | 13.31 | 74841 | 3.48 |
| ZZZZZZ | 321169 | 6.52 | 583341 | 7.71 | 316518 | 11.07 | 254620 | 13.31 | 73359 | 3.49 |
| ZZZZZZ | 315630 | 6.52 | 576534 | 7.71 | 314811 | 11.07 | 259383 | 13.31 | 69521 | 3.48 |
| ZZZZZZ | 326225 | 6.52 | 589356 | 7.71 | 322378 | 11.07 | 264953 | 13.31 | 76791 | 3.48 |
| ZZZZZZ | 330532 | 6.52 | 598017 | 7.72 | 325581 | 11.07 | 267275 | 13.31 | 79155 | 3.48 |
| ZZZZZZ | 326999 | 6.53 | 593018 | 7.72 | 321545 | 11.07 | 258212 | 13.31 | 73598 | 3.48 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.4

# Volatile Surrogate Recovery Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC16336-4 | V14084.D | 85.0 | 91.0 | 96.0 |
| MC16419-1MS | V14078.D | 92.0 | 92.0 | 97.0 |
| MC16419-1MSD | V14079.D | 92.0 | 93.0 | 98.0 |
| MSV573-BS | V14071.D | 91.0 | 92.0 | 98.0 |
| MSV573-BSD | V14072.D | 91.0 | 91.0 | 97.0 |
| MSV573-MB | V14074.D | 85.0 | 91.0 | 97.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethaue | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Method: SW846 8260B | Matrix: SO |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC16336-1 | M52770.D | 104.0 | 110.0 | 96.0 |
| MC16336-2 | G122515.D | 98.0 | 92.0 | 96.0 |
| MC16336-3 | M52771.D | 103.0 | 109.0 | 93.0 |
| MC16336-6 | M52769.D | 98.0 | 121.0 | 94.0 |
| MC16336-7 | G122516.D | 106.0 | 100.0 | 104.0 |
| MC16336-8 | G122514.D | 97.0 | 91.0 | 95.0 |
| MC16254-4MS | G122512.D | 102.0 | 95.0 | 96.0 |
| MC16254-4MSD | G122513.D | 102.0 | 95.0 | 97.0 |
| MC16336-6MS | M52805.D | 97.0 | 115.0 | 91.0 |
| MC16336-6MSD | M52806.D | 96.0 | 116.0 | 93.0 |
| MC16366-7MS | M52775.D | 98.0 | 116.0 | 95.0 |
| MC16366-7MSD | M52776.D | 96.0 | 112.0 | 96.0 |
| MSG4871-BS | G122495.D | 104.0 | 98.0 | 98.0 |
| MSG4871-BSD | G122496.D | 106.0 | 99.0 | 99.0 |
| MSG4871-MB | G122498.D | 105.0 | 99.0 | 99.0 |
| MSM1789-BS | M52760.D | 101.0 | 113.0 | 92.0 |
| MSM1789-BSD | M52761.D | 100.0 | 115.0 | 91.0 |
| MSM1789-MB | M52763.D | 94.0 | 111.0 | 93.0 |
| MSM1790-BS1 | M52760.D | 101.0 | 113.0 | 92.0 |
| MSM1790-BSD1 | M52761.D | 100.0 | 115.0 | 91.0 |
| MSM1790-MB1 | M52763.D | 94.0 | 111.0 | 93.0 |
| MSM1790-MB | M52787.D | 94.0 | 114.0 | 89.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromoflnorobenzene | 70-130% |

New England ACCUTEST LABORATORIES

## GC Volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Projeet: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31226-MB | BK19433.D | 1 | 11/30/12 | AP | 11/29/12 | OP31226 | GBK704 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16336-5



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.015 | 0.013 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.015 | 0.010 | ug/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 97% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 114% | 36-173% |

# Method Blank Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31352-MB | BK19728.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16336-1, MC16336-2, MC16336-3, MC16336-6, MC16336-7, MC16336-8



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 2.5 | 1.1 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.5 | 0.96 | ug/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 98% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 108% | 61-167% |

# Blank Spike Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31226-BS | BK19434.D | 1 | 11/30/12 | AP | 11/29/12 | OP31226 | GBK704 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16336-5

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 0.071 | 0.065 | 92 | 60-140 |
| 106-93-4 | 1,2-Dibromoethane | 0.071 | 0.071 | 100 | 60-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 97% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 114% | 36-173% |

7.2.1

7

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31352-BS | BK19729.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16336-1, MC16336-2, MC16336-3, MC16336-6, MC16336-7, MC16336-8

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 65 | 66.5 | 102 | 59-142 |
| 106-93-4 | 1,2-Dibromoethane | 65 | 60.3 | 93 | 56-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 97% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 107% | 61-167% |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31226-MS | BK19435.D | 1 | 11/30/12 | AP | 11/29/12 | OP31226 | GBK704 |
| OP31226-MSD | BK19436.D | 1 | 11/30/12 | AP | 11/29/12 | OP31226 | GBK704 |
| MC16100-11 | BK19437.D | 1 | 11/30/12 | AP | 11/29/12 | OP31226 | GBK704 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16336-5



| CAS No. | Compound | MC16100-11 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 0.071 | 0.065 | 92 | 0.059 | 83 | 10 | 64-141/29 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 0.071 | 0.074 | 104 | 0.074 | 104 | 0 | 63-163/27 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC16100-11 | Limits |
|---|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 96% | 98% | 94% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 113% | 113% | 114% | 36-173% |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31352-MS | BK19730.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |
| OP31352-MSD | BK19731.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |
| MC16336-6 | BK19735.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16336-1, MC16336-2, MC16336-3, MC16336-6, MC16336-7, MC16336-8



| CAS No. | Compound | MC16336-6 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 367 | 337 | 92 | 382 | 91 | 13 | 40-156/27 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 367 | 304 | 83 | 342 | 82 | 12 | 48-141/27 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC16336-6 | Limits |
|---|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 91% | 85% | 94% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 99% | 91% | 96% | 61-167% |

* = Outside of Control Limits.

# Volatile Surrogate Recovery Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Method: SW846 8011 | Matrix: AQ |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] | S1 [b] |
|---|---|---|---|
| MC16336-5 | BK19444.D | 104.0 | 111.0 |
| OP31226-BS | BK19434.D | 97.0 | 114.0 |
| OP31226-MB | BK19433.D | 97.0 | 114.0 |
| OP31226-MS | BK19435.D | 96.0 | 113.0 |
| OP31226-MSD | BK19436.D | 98.0 | 113.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Bromofluorobenzene (S) | 36-173% |

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2

# Volatile Surrogate Recovery Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8011 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] | S1 [b] |
|---|---|---|---|
| MC16336-1 | BK19732.D | 94.0 | 103.0 |
| MC16336-2 | BK19733.D | 87.0 | 90.0 |
| MC16336-3 | BK19734.D | 107.0 | 109.0 |
| MC16336-6 | BK19735.D | 94.0 | 96.0 |
| MC16336-7 | BK19736.D | 360.0* [c] | 96.0 |
| MC16336-8 | BK19737.D | 92.0 | 94.0 |
| OP31352-BS | BK19729.D | 97.0 | 107.0 |
| OP31352-MB | BK19728.D | 98.0 | 108.0 |
| OP31352-MS | BK19730.D | 91.0 | 99.0 |
| OP31352-MSD | BK19731.D | 85.0 | 91.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Bromofluorobenzene (S) | 61-167% |

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2
(c) Outside control limits due to possible matrix interference.

# GC Surrogate Retention Time Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBK704-CC703 | Injection Date: | 11/30/12 |
| Lab File ID: | BK19432.D | Injection Time: | 08:35 |
| Instrument ID: | GCBK | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.93 | 4.61 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| OP31226-MB | BK19433.D | 11/30/12 | 08:58 | 4.93 | 4.60 |
| OP31227-MB | BK19433A.D | 11/30/12 | 08:58 | 4.93 | 4.60 |
| OP31226-BS | BK19434.D | 11/30/12 | 09:22 | 4.93 | 4.60 |
| OP31227-BS | BK19434A.D | 11/30/12 | 09:22 | 4.93 | 4.60 |
| OP31226-MS | BK19435.D | 11/30/12 | 09:46 | 4.93 | 4.61 |
| OP31226-MSD | BK19436.D | 11/30/12 | 10:10 | 4.93 | 4.61 |
| MC16100-11 | BK19437.D | 11/30/12 | 10:34 | 4.93 | 4.61 |
| ZZZZZZ | BK19438.D | 11/30/12 | 10:58 | 4.93 | 4.60 |
| ZZZZZZ | BK19439.D | 11/30/12 | 11:23 | 4.93 | 4.60 |
| ZZZZZZ | BK19440.D | 11/30/12 | 11:47 | 4.93 | 4.60 |
| ZZZZZZ | BK19441.D | 11/30/12 | 12:11 | 4.93 | 4.60 |
| ZZZZZZ | BK19442.D | 11/30/12 | 12:35 | 4.93 | 4.61 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

# GC Surrogate Retention Time Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBK704-CC703 | Injection Date: | 11/30/12 |
| Lab File ID: | BK19443.D | Injection Time: | 12:59 |
| Instrument ID: | GCBK | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.93 | 4.62 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| MC16336-5 | BK19444.D | 11/30/12 | 13:23 | 4.93 | 4.62 |
| GBK704-ECC703 | BK19445.D | 11/30/12 | 13:47 | 4.93 | 4.62 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

7.5.2

7

# GC Surrogate Retention Time Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBK712-ICC712 | Injection Date: | 12/09/12 |
| Lab File ID: | BK19722.D | Injection Time: | 17:47 |
| Instrument ID: | GCBK | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.90 | 4.56 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| OP31352-MB | BK19728.D | 12/09/12 | 20:14 | 4.90 | 4.57 |
| OP31352-BS | BK19729.D | 12/09/12 | 20:38 | 4.90 | 4.56 |
| OP31352-MS | BK19730.D | 12/09/12 | 21:03 | 4.90 | 4.57 |
| OP31352-MSD | BK19731.D | 12/09/12 | 21:27 | 4.90 | 4.57 |
| MC16336-1 | BK19732.D | 12/09/12 | 21:52 | 4.90 | 4.56 |
| MC16336-2 | BK19733.D | 12/09/12 | 22:16 | 4.90 | 4.56 |
| MC16336-3 | BK19734.D | 12/09/12 | 22:41 | 4.90 | 4.56 |
| MC16336-6 | BK19735.D | 12/09/12 | 23:05 | 4.90 | 4.57 |
| MC16336-7 | BK19736.D | 12/09/12 | 23:30 | 4.90 | 4.56 |
| MC16336-8 | BK19737.D | 12/09/12 | 23:55 | 4.90 | 4.56 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

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## General Chemistry

# QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC16336
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Sample: MC16336-1 | Analyzed: 03-DEC-12 by HS | | Method: SM21 2540 B MOD. |
| ClientID: MW-17-21 | | | |
| Wet Weight (Total) | 28.563 | g | |
| Tare Weight | 20.614 | g | |
| Dry Weight (Total) | 27.899 | g | |
| Solids, Percent | 91.6 | % | |
| Sample: MC16336-2 | Analyzed: 03-DEC-12 by HS | | Method: SM21 2540 B MOD. |
| ClientID: MW-17-35 | | | |
| Wet Weight (Total) | 36.77 | g | |
| Tare Weight | 27.99 | g | |
| Dry Weight (Total) | 34.816 | g | |
| Solids, Percent | 77.7 | % | |
| Sample: MC16336-3 | Analyzed: 03-DEC-12 by HS | | Method: SM21 2540 B MOD. |
| ClientID: MW-17-14 | | | |
| Wet Weight (Total) | 28.042 | g | |
| Tare Weight | 18.839 | g | |
| Dry Weight (Total) | 27.233 | g | |
| Solids, Percent | 91.2 | % | |
| Sample: MC16336-6 | Analyzed: 03-DEC-12 by HS | | Method: SM21 2540 B MOD. |
| ClientID: MW-18-12 | | | |
| Wet Weight (Total) | 24.26 | g | |
| Tare Weight | 18.349 | g | |
| Dry Weight (Total) | 23.818 | g | |
| Solids, Percent | 92.5 | % | |
| Sample: MC16336-7 | Analyzed: 03-DEC-12 by HS | | Method: SM21 2540 B MOD. |
| ClientID: MW-18-18 | | | |
| Wet Weight (Total) | 29.327 | g | |
| Tare Weight | 18.872 | g | |
| Dry Weight (Total) | 26.598 | g | |
| Solids, Percent | 73.9 | % | |
| Sample: MC16336-8 | Analyzed: 03-DEC-12 by HS | | Method: SM21 2540 B MOD. |
| ClientID: MW-18-39 | | | |
| Wet Weight (Total) | 30.096 | g | |
| Tare Weight | 23.904 | g | |
| Dry Weight (Total) | 29.721 | g | |
| Solids, Percent | 93.9 | % | |

# Roxana Drilling 2013 Data Review

**Laboratory SDG: MC16445**

**Data Reviewer: Elizabeth Kunkel**

**Peer Reviewer: Steve Gragert**

**Date Reviewed: 2/20/2013**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| MW-22-12 | MW-22-12-Dup |
| MW-22-23 | MW-22-23-Dup |
| MW-22-39 | Trip Blank |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS/LCSD recoveries were outside evaluation criteria. Due to standard degradation, acrolein was not spiked in the initial calibration verification or LCS. Initial calibration recovery for acetone exceeds 50 percent difference (%D). These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 0.3°C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required. Additionally, the laboratory issued a letter indicating that VOC trip blanks were received headspace free, and that the cooler receipt form had been incorrectly marked as not applicable with regards to trip blanks and VOC headspace.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ | Parameter | Analyte | LCS/LCSD | RPD | LCS/LCSD/ |
|---|---|---|---|---|---|

| LCSD ID | | | Recovery | | RPD Criteria |
|---|---|---|---|---|---|
| MSH1953-BS | VOCs | Acrolein | **53**/NA | NA | 70-130/NA |
| MSH1953-BS | VOCs | 2-Chloroethyl vinyl ether | **65**/NA | NA | 70-130/NA |
| MSH1953-BS | VOCs | 2,2-Dichloropropane | **137**/NA | NA | 70-130/NA |
| MSK2153-BS/BSD | VOCs | Acetone | 71/**66** | 7 | 70-130/25 |
| MSK2153-BS/BSD | VOCs | Acrolein | **0**/**0** | NA | 70-130/25 |
| MSM1788-BS/BSD | VOCs | Acetone | **58**/**61** | 4 | 70-130/25 |
| MSM1788-BS/BSD | VOCs | Acrolein | **44**/**46** | 4 | 70-130/25 |
| MSM1788-BS/BSD | VOCs | Vinyl acetate | **58**/**56** | 4 | 70-130/25 |

Analytical data that required qualification based on LCS/LCSD data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. Professional judgment was used to not reject acrolein in samples associated with LCS/LCSD MSK2153-BS/BSD due to acrolein not being spiked due to standard degradation. LCS MSH1953-BS was associated with the trip blank. Trip blanks are quality control samples and are not qualified.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| MW-22-23 | VOCs | Acetone | **UJ** |
| MW-22-23-Dup | VOCs | Acetone | **UJ** |
| MW-22-39 | VOCs | Acetone | **UJ** |
| MW-22-12 | VOCs | Acetone | **UJ** |
| MW-22-12 | VOCs | Acrolein | **UJ** |
| MW-22-12 | VOCs | Vinyl acetate | **UJ** |
| MW-22-12-Dup | VOCs | Acetone | **UJ** |
| MW-22-12-Dup | VOCs | Acrolein | **UJ** |
| MW-22-12-Dup | VOCs | Vinyl acetate | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

No

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

No

| Sample ID | Parameter | Analyte | IS Area Recovery | IS Criteria |
|---|---|---|---|---|
| MSM1788-BS | VOCs | Tert butyl alcohol-$D_9$ | **118203** | 29427-117706 |

| Sample ID | Parameter | Analyte | IS Area Recovery | IS Criteria |
|---|---|---|---|---|
| MSM1788-BSD | VOCs | Tert butyl alcohol-$D_9$ | **125465** | 29427-117706 |

MSM1788-BS/BSD are quality control samples and are not qualified. No qualification of data was required.

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

Yes

| Field ID | Field Duplicate ID |
|---|---|
| MW-22-12 | MW-22-12-Dup |
| MW-22-23 | MW-22-23-Dup |

*Were field duplicate sample RPDs within evaluation criteria?*

Yes

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

The initial calibration verification (ICV) recovery for acetone exceeded 50 percent difference (%D). Analytical data that required qualification based on ICV data are included in the table below.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| MW-22-12 | VOCs | Acetone | **UJ** |
| MW-22-12-Dup | VOCs | Acetone | **UJ** |
| MW-22-23 | VOCs | Acetone | **UJ** |
| MW-22-23-Dup | VOCs | Acetone | **UJ** |
| MW-22-39 | VOCs | Acetone | **UJ** |

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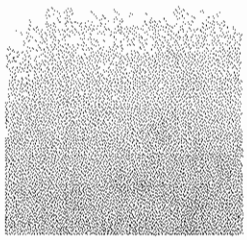
02/19/13





## Technical Report for

Shell Oil

URSMOSTL: Roxana Drilling, Roxana, IL

21562735.00015

Accutest Job Number: MC16445

Sampling Date: 11/29/12

Report to:

URS Corporation

elizabeth.kunkel@URS.com

ATTN: Elizabeth Kunkel

Reviewed on 2/19/2013

Total number of pages in report: **85**

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Reza Tand
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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# Sample Summary

Shell Oil

Job No: MC16445

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562735.00015

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| MC16445-1 | 11/29/12 | 13:45 | MMSJ | 12/03/12 | SO | Soil | MW-22-12 |
| MC16445-2 | 11/29/12 | 13:45 | MMSJ | 12/03/12 | SO | Soil | MW-22-12-DUP |
| MC16445-3 | 11/29/12 | 14:40 | MMSJ | 12/03/12 | SO | Soil | MW-22-23 |
| MC16445-4 | 11/29/12 | 14:40 | MMSJ | 12/03/12 | SO | Soil | MW-22-23-DUP |
| MC16445-5 | 11/29/12 | 14:50 | MMSJ | 12/03/12 | SO | Soil | MW-22-39 |
| MC16445-6 | 11/29/12 | 00:00 | MMSJ | 12/03/12 | AQ | Trip Blank Water | TRIP BLANK |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

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# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC16445 |
| **Site:** | URSMOSTL: Roxana Drilling, Roxana, IL | **Report Date** | 1/2/2013 11:08:01 AM |

5 Sample(s), 1 Trip Blank(s) were collected on 11/29/2012 and were received at Accutest on 12/03/2012 properly preserved, at 0.3 Deg. C and intact. These Samples received an Accutest job number of MC16445. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. 1-Chlorohexane was searched in the library search and reported only if detections were found.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSH1953

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC16569-2MS, MC16569-2MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for 2,2-Dichloropropane, 2-Chloroethyl vinyl ether, Acrolein are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Acetone are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike
- MS/MSD Recovery(s) for 2-Chloroethyl vinyl ether, Acrolein are outside control limits. Blank Spike meets program technical requirements.

**Matrix** SO **Batch ID:** MSK2153

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) JB20375-3MS, JB20375-3MSD were used as the QC samples indicated.
- Initial calibration verification MSK2132-ICV2132 for acetone exceeds 50% Difference. Acetone is within criteria in continuing calibration check standard MSK2153-CC2132.
- MSK2153-BSD for acetone: Outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for 2-Butanone (MEK), Acetone are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike
- MSK2153-BS/BSD for Acrolein: Outside control limits due standard degradation. Refer to Continuing Calibration.
- JB20375-3MS/MSD for Acrolein: Outside control limits due standard degradation. Refer to Continuing Calibration.
- Initial calibration verification stanard MSK2132-ICV2132 for acrolein: Outside control limits due to standard degradation. Refer to Continuing Calibration.

**Matrix** SO **Batch ID:** MSM1788

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC16395-2MS, MC16395-2MSD were used as the QC samples indicated.
- BS/BSD Recovery(s) for Acetone, Acrolein, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,4-Dioxane, 2-Hexanone, 4-Methyl-2-pentanone (MIBK). Acrolein are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,4-Dioxane, 2-Butanone (MEK), 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acrolein, Hexachlorobutadiene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

## Volatiles by GCMS By Method SW846 8260B

| Matrix SO | Batch ID: MSM1788 |
|---|---|

- RPD(s) for MSD for Hexachlorobutadiene are outside control limits for sample MC16395-2MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- Initial calibration verification MSM1784-ICV1784 for acetone exceeds 50% Difference (response bias high). Associated samples are non-detect for this compound.
- MSM1788-BS/BSD for Tert Butyl Alcohol-D9: Outside control limits. Target analytes not associated with this internal standard.

## Volatiles by GC By Method SW846 8011

| Matrix AQ | Batch ID: OP31406 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16600-6MS, MC16600-6MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

| Matrix SO | Batch ID: OP31352 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16336-6MS, MC16336-6MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN41152 |
|---|---|

- Sample(s) MC16373-8DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC16445).

ACCUTEST
LABORATORIES

Elizabeth Kunkel
URS
St. Louis, MO

**February 15, 2013**

Accutest Job: MC16445

Ms. Elizabeth Kunkel,

On the report for SDG MC16445, the sample receipt confirmation was marked incorrectly by the lab. The SDG did have a trip blank that was received in the cooler, the trip blank was marked on the COC, and the vials that were sent for VOC analysis were received headspace free.

Sincerely,

Jeremy M. Vienneau
Accutest Laboratories of New England, Inc.

# Summary of Hits



Job Number: MC16445
Account: Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Collected: 11/29/12

| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| MC16445-1 | MW-22-12 | | | | | |
| Benzene | | 0.0023 | 0.00064 | 0.00038 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0105 | 0.0026 | 0.00031 | mg/kg | SW846 8260B |
| Toluene | | 0.0096 | 0.0064 | 0.0011 | mg/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | | 0.00075 J | 0.0064 | 0.00029 | mg/kg | SW846 8260B |
| m,p-Xylene | | 0.0017 J | 0.0026 | 0.0010 | mg/kg | SW846 8260B |
| o-Xylene | | 0.00069 J | 0.0026 | 0.00031 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0024 J | 0.0026 | 0.00031 | mg/kg | SW846 8260B |
| MC16445-2 | MW-22-12-DUP | | | | | |
| Benzene | | 0.0024 | 0.00076 | 0.00045 | mg/kg | SW846 8260B |
| Carbon disulfide | | 0.0021 J | 0.0076 | 0.00025 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0107 | 0.0030 | 0.00036 | mg/kg | SW846 8260B |
| Toluene | | 0.0099 | 0.0076 | 0.0013 | mg/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | | 0.00084 J | 0.0076 | 0.00034 | mg/kg | SW846 8260B |
| m,p-Xylene | | 0.0018 J | 0.0030 | 0.0012 | mg/kg | SW846 8260B |
| o-Xylene | | 0.00078 J | 0.0030 | 0.00036 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0026 J | 0.0030 | 0.00036 | mg/kg | SW846 8260B |
| MC16445-3 | MW-22-23 | | | | | |
| n-Butylbenzene | | 40.6 | 12 | 0.42 | mg/kg | SW846 8260B |
| sec-Butylbenzene | | 12.4 | 12 | 0.53 | mg/kg | SW846 8260B |
| tert-Butylbenzene | | 11.8 J | 12 | 2.0 | mg/kg | SW846 8260B |
| Ethylbenzene | | 354 | 4.6 | 0.56 | mg/kg | SW846 8260B |
| Isopropylbenzene | | 32.4 | 12 | 0.53 | mg/kg | SW846 8260B |
| p-Isopropyltoluene | | 7.17 J | 12 | 0.41 | mg/kg | SW846 8260B |
| Naphthalene | | 43.2 | 12 | 2.9 | mg/kg | SW846 8260B |
| n-Propylbenzene | | 98.7 | 12 | 2.3 | mg/kg | SW846 8260B |
| Toluene | | 358 | 12 | 2.0 | mg/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | | 381 | 12 | 0.52 | mg/kg | SW846 8260B |
| 1,3,5-Trimethylbenzene | | 111 | 12 | 0.49 | mg/kg | SW846 8260B |
| m,p-Xylene | | 787 | 4.6 | 1.8 | mg/kg | SW846 8260B |
| o-Xylene | | 361 | 4.6 | 0.55 | mg/kg | SW846 8260B |
| Xylene (total) | | 1150 | 4.6 | 0.55 | mg/kg | SW846 8260B |
| MC16445-4 | MW-22-23-DUP | | | | | |
| n-Butylbenzene | | 37.7 | 13 | 0.47 | mg/kg | SW846 8260B |
| sec-Butylbenzene | | 10.9 J | 13 | 0.59 | mg/kg | SW846 8260B |
| tert-Butylbenzene | | 10.0 J | 13 | 2.2 | mg/kg | SW846 8260B |
| Ethylbenzene | | 329 | 5.1 | 0.62 | mg/kg | SW846 8260B |
| Isopropylbenzene | | 28.8 | 13 | 0.58 | mg/kg | SW846 8260B |

# Summary of Hits

Job Number: MC16445
Account: Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Collected: 11/29/12

| Lab Sample ID / Analyte | Client Sample ID / Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|
| p-Isopropyltoluene | 6.55 J | 13 | 0.45 | mg/kg | SW846 8260B |
| Naphthalene | 39.8 | 13 | 3.2 | mg/kg | SW846 8260B |
| n-Propylbenzene | 88.7 | 13 | 2.6 | mg/kg | SW846 8260B |
| Toluene | 318 | 13 | 2.2 | mg/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | 348 | 13 | 0.57 | mg/kg | SW846 8260B |
| 1,3,5-Trimethylbenzene | 99.2 | 13 | 0.54 | mg/kg | SW846 8260B |
| m,p-Xylene | 742 | 5.1 | 2.0 | mg/kg | SW846 8260B |
| o-Xylene | 339 | 5.1 | 0.61 | mg/kg | SW846 8260B |
| Xylene (total) | 1080 | 5.1 | 0.61 | mg/kg | SW846 8260B |
| MC16445-5 MW-22-39 | | | | | |
| n-Butylbenzene | 1.32 | 0.77 | 0.028 | mg/kg | SW846 8260B |
| sec-Butylbenzene | 0.166 J | 0.77 | 0.035 | mg/kg | SW846 8260B |
| tert-Butylbenzene | 0.558 J | 0.77 | 0.14 | mg/kg | SW846 8260B |
| Ethylbenzene | 0.521 | 0.31 | 0.037 | mg/kg | SW846 8260B |
| Isopropylbenzene | 0.130 J | 0.77 | 0.035 | mg/kg | SW846 8260B |
| p-Isopropyltoluene | 0.613 J | 0.77 | 0.027 | mg/kg | SW846 8260B |
| n-Propylbenzene | 0.309 J | 0.77 | 0.16 | mg/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | 5.33 | 0.77 | 0.034 | mg/kg | SW846 8260B |
| 1,3,5-Trimethylbenzene | 3.07 | 0.77 | 0.033 | mg/kg | SW846 8260B |
| m,p-Xylene | 1.40 | 0.31 | 0.12 | mg/kg | SW846 8260B |
| o-Xylene | 0.941 | 0.31 | 0.037 | mg/kg | SW846 8260B |
| Xylene (total) | 2.34 | 0.31 | 0.037 | mg/kg | SW846 8260B |
| MC16445-6 TRIP BLANK | | | | | |

No hits reported in this sample.

## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-22-12 | | |
| **Lab Sample ID:** | MC16445-1 | **Date Sampled:** | 11/29/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/03/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | 78.4 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M52756.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.96 g | 5.0 ml |
| Run #2 | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0064 | 0.0016 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 0.032 | 0.013 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 0.032 | 0.0016 | mg/kg | |
| 71-43-2 | Benzene | 0.0023 | 0.00064 | 0.00038 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0064 | 0.00029 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0064 | 0.00048 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0026 | 0.00027 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0026 | 0.0026 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0026 | 0.00067 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0064 | 0.0016 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0064 | 0.00024 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0064 | 0.00030 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0064 | 0.0011 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0064 | 0.00021 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0026 | 0.00093 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0026 | 0.00035 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0064 | 0.0016 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0064 | 0.0026 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0026 | 0.00066 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0064 | 0.00060 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0064 | 0.0014 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0064 | 0.00029 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0026 | 0.00038 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0026 | 0.00028 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0026 | 0.00029 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0026 | 0.00027 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0026 | 0.0015 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0026 | 0.00035 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0026 | 0.00037 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0026 | 0.00047 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0026 | 0.00039 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0026 | 0.00037 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-22-12 | | |
| **Lab Sample ID:** | MC16445-1 | **Date Sampled:** | 11/29/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/03/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | 78.4 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0026 | 0.00048 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0064 | 0.00030 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0064 | 0.0011 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0064 | 0.00034 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0026 | 0.00022 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0026 | 0.00064 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.032 | 0.032 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0064 | 0.00088 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0105 | 0.0026 | 0.00031 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0064 | 0.00060 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0064 | 0.00064 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0064 | 0.00029 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0064 | 0.00023 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0026 | 0.00037 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0064 | 0.00064 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0064 | 0.00063 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0026 | 0.0015 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.0064 | 0.0016 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0064 | 0.0013 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0064 | 0.00030 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0064 | 0.0013 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroetbane | ND | 0.0026 | 0.00055 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0026 | 0.00029 | mg/kg | |
| 108-88-3 | Toluene | 0.0096 | 0.0064 | 0.0011 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0064 | 0.00030 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0064 | 0.00029 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0026 | 0.00040 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0026 | 0.00094 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0026 | 0.00027 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0026 | 0.00039 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0064 | 0.00038 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 0.00075 | 0.0064 | 0.00029 | mg/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0064 | 0.00027 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0064 | 0.00072 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0026 | 0.00035 | mg/kg | |
| | m,p-Xylene | 0.0017 | 0.0026 | 0.0010 | mg/kg | J |
| 95-47-6 | o-Xylene | 0.00069 | 0.0026 | 0.00031 | mg/kg | J |
| 1330-20-7 | Xylene (total) | 0.0024 | 0.0026 | 0.00031 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-22-12 | | |
| Lab Sample ID: | MC16445-1 | Date Sampled: | 11/29/12 |
| Matrix: | SO - Soil | Date Received: | 12/03/12 |
| Method: | SW846 8260B | Percent Solids: | 78.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 117% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-22-12 | | |
| **Lab Sample ID:** | MC16445-1 | **Date Sampled:** | 11/29/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/03/12 |
| **Method:** | SW846 8011 SW846 3550B | **Percent Solids:** | 78.4 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19739.D | 1 | 12/10/12 | AP | 12/10/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.2 g | 50.0 ml |
| Run #2 | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0032 | 0.0014 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0032 | 0.0012 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 94% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 92% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-22-12-DUP | | |
| Lab Sample ID: | MC16445-2 | Date Sampled: | 11/29/12 |
| Matrix: | SO - Soil | Date Received: | 12/03/12 |
| Method: | SW846 8260B | Percent Solids: | 76.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M52757.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.32 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0076 | 0.0019 | mg/kg | U |
| 107-02-8 | Acrolein | ND | 0.038 | 0.015 | mg/kg | U |
| 107-13-1 | Acrylonitrile | ND | 0.038 | 0.0019 | mg/kg | |
| 71-43-2 | Benzene | 0.0024 | 0.00076 | 0.00045 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0076 | 0.00034 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0076 | 0.00056 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0030 | 0.00032 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0030 | 0.0030 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0030 | 0.00078 | mg/kg | |
| 78-93-3 | 2-Butanoue (MEK) | ND | 0.0076 | 0.0019 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0076 | 0.00028 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0076 | 0.00035 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0076 | 0.0013 | mg/kg | |
| 75-15-0 | Carbon disulfide | 0.0021 | 0.0076 | 0.00025 | mg/kg | J |
| 56-23-5 | Carbon tetrachloride | ND | 0.0030 | 0.0011 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0030 | 0.00042 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0076 | 0.0019 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0076 | 0.0030 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0030 | 0.00078 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0076 | 0.00070 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0076 | 0.0017 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0076 | 0.00034 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0030 | 0.00045 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0030 | 0.00033 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0030 | 0.00034 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0030 | 0.00032 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0030 | 0.0017 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0030 | 0.00041 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0030 | 0.00043 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0030 | 0.00056 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0030 | 0.00045 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0030 | 0.00043 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-22-12-DUP | | |
| Lab Sample ID: | MC16445-2 | Date Sampled: | 11/29/12 |
| Matrix: | SO - Soil | Date Received: | 12/03/12 |
| Method: | SW846 8260B | Percent Solids: | 76.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0030 | 0.00056 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0076 | 0.00035 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0076 | 0.0013 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0076 | 0.00040 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0030 | 0.00026 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0030 | 0.00075 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.038 | 0.038 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0076 | 0.0010 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0107 | 0.0030 | 0.00036 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0076 | 0.00070 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0076 | 0.00076 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0076 | 0.00035 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0076 | 0.00027 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0030 | 0.00044 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0076 | 0.00076 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0076 | 0.00075 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0030 | 0.0018 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.0076 | 0.0019 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0076 | 0.0015 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0076 | 0.00035 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0076 | 0.0015 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0030 | 0.00064 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0030 | 0.00035 | mg/kg | |
| 108-88-3 | Toluene | 0.0099 | 0.0076 | 0.0013 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0076 | 0.00036 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzeue | ND | 0.0076 | 0.00035 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0030 | 0.00048 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0030 | 0.0011 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0030 | 0.00032 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0030 | 0.00046 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0076 | 0.00044 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 0.00084 | 0.0076 | 0.00034 | mg/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0076 | 0.00032 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0076 | 0.00084 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0030 | 0.00041 | mg/kg | |
| | m,p-Xylene | 0.0018 | 0.0030 | 0.0012 | mg/kg | J |
| 95-47-6 | o-Xylene | 0.00078 | 0.0030 | 0.00036 | mg/kg | J |
| 1330-20-7 | Xylene (total) | 0.0026 | 0.0030 | 0.00036 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-22-12-DUP | | |
| Lab Sample ID: | MC16445-2 | Date Sampled: | 11/29/12 |
| Matrix: | SO - Soil | Date Received: | 12/03/12 |
| Method: | SW846 8260B | Percent Solids: | 76.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 96% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 116% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-22-12-DUP | | |
| **Lab Sample ID:** | MC16445-2 | **Date Sampled:** | 11/29/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/03/12 |
| **Method:** | SW846 8011 SW846 3550B | **Percent Solids:** | 76.6 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19740.D | 1 | 12/10/12 | AP | 12/10/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.2 g | 50.0 ml |
| Run #2 | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0032 | 0.0014 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0032 | 0.0012 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 96% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 93% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-22-23 | | |
| Lab Sample ID: | MC16445-3 | Date Sampled: | 11/29/12 |
| Matrix: | SO - Soil | Date Received: | 12/03/12 |
| Method: | SW846 8260B | Percent Solids: | 81.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K65375.D | 1 | 12/05/12 | GK | n/a | n/a | MSK2153 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.95 g | 10.0 ml | 5.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 12 | 2.9 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 58 | 23 | mg/kg | |
| 107-13-1 | Acrylonitrile | ND | 58 | 2.9 | mg/kg | |
| 71-43-2 | Benzene | ND | 1.2 | 0.68 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 12 | 0.51 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 12 | 0.86 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 4.6 | 0.49 | mg/kg | |
| 75-25-2 | Bromoform | ND | 4.6 | 4.6 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 4.6 | 1.2 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 12 | 2.9 | mg/kg | |
| 104-51-8 | n-Butylbenzene | 40.6 | 12 | 0.42 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | 12.4 | 12 | 0.53 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | 11.8 | 12 | 2.0 | mg/kg | J |
| 75-15-0 | Carbon disulfide | ND | 12 | 0.38 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 4.6 | 1.7 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 4.6 | 0.63 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 12 | 2.9 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 12 | 4.6 | mg/kg | |
| 67-66-3 | Chloroform | ND | 4.6 | 1.2 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 12 | 1.1 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 12 | 2.5 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 12 | 0.52 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 4.6 | 0.68 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 4.6 | 0.50 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 4.6 | 0.52 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 4.6 | 0.49 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 4.6 | 2.6 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 4.6 | 0.62 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 4.6 | 0.66 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 4.6 | 0.85 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 4.6 | 0.69 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 4.6 | 0.66 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-22-23 | | |
| **Lab Sample ID:** | MC16445-3 | **Date Sampled:** | 11/29/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/03/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | 81.1 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 4.6 | 0.86 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 12 | 0.53 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 12 | 2.0 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 12 | 0.61 | mg/kg | |
| 10061-01-5 | cis-1,3-Dicbloropropene | ND | 4.6 | 0.39 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 4.6 | 1.1 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 58 | 58 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 12 | 1.6 | mg/kg | |
| 100-41-4 | Ethylbenzene | 354 | 4.6 | 0.56 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 12 | 1.1 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 12 | 1.2 | mg/kg | |
| 98-82-8 | Isopropylbenzene | 32.4 | 12 | 0.53 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | 7.17 | 12 | 0.41 | mg/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 4.6 | 0.66 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 12 | 1.2 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 12 | 1.1 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 4.6 | 2.7 | mg/kg | |
| 91-20-3 | Naphthalene | 43.2 | 12 | 2.9 | mg/kg | |
| 103-65-1 | n-Propylbenzene | 98.7 | 12 | 2.3 | mg/kg | |
| 100-42-5 | Styrene | ND | 12 | 0.54 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 12 | 2.3 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 4.6 | 0.98 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 4.6 | 0.53 | mg/kg | |
| 108-88-3 | Toluene | 358 | 12 | 2.0 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 12 | 0.55 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 12 | 0.53 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 4.6 | 0.73 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 4.6 | 1.7 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 4.6 | 0.49 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 4.6 | 0.70 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 12 | 0.67 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 381 | 12 | 0.52 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 111 | 12 | 0.49 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 12 | 1.3 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 4.6 | 0.63 | mg/kg | |
| | m,p-Xylene | 787 | 4.6 | 1.8 | mg/kg | |
| 95-47-6 | o-Xylene | 361 | 4.6 | 0.55 | mg/kg | |
| 1330-20-7 | Xylene (total) | 1150 | 4.6 | 0.55 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-22-23 | | |
| Lab Sample ID: | MC16445-3 | Date Sampled: | 11/29/12 |
| Matrix: | SO - Soil | Date Received: | 12/03/12 |
| Method: | SW846 8260B | Percent Solids: | 81.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 103% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 112% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-22-23 | | |
| Lab Sample ID: | MC16445-3 | Date Sampled: | 11/29/12 |
| Matrix: | SO - Soil | Date Received: | 12/03/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 81.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19741.D | 1 | 12/10/12 | AP | 12/10/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.2 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0031 | 0.0014 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0031 | 0.0012 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 72% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 83% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-22-23-DUP | | |
| **Lab Sample ID:** | MC16445-4 | **Date Sampled:** | 11/29/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/03/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | 80.7 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K65376.D | 1 | 12/05/12 | GK | n/a | n/a | MSK2153 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 12.0 g | 10.0 ml | 2.5 ul |
| Run #2 | | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 13 | 3.2 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 64 | 25 | mg/kg | |
| 107-13-1 | Acrylonitrile | ND | 64 | 3.2 | mg/kg | |
| 71-43-2 | Benzene | ND | 1.3 | 0.75 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 13 | 0.57 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 13 | 0.95 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 5.1 | 0.54 | mg/kg | |
| 75-25-2 | Bromoform | ND | 5.1 | 5.1 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 5.1 | 1.3 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 13 | 3.2 | mg/kg | |
| 104-51-8 | n-Butylbenzene | 37.7 | 13 | 0.47 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | 10.9 | 13 | 0.59 | mg/kg | J |
| 98-06-6 | tert-Butylbenzene | 10.0 | 13 | 2.2 | mg/kg | J |
| 75-15-0 | Carbon disulfide | ND | 13 | 0.42 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 5.1 | 1.9 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 5.1 | 0.70 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 13 | 3.2 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 13 | 5.1 | mg/kg | |
| 67-66-3 | Chloroform | ND | 5.1 | 1.3 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 13 | 1.2 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 13 | 2.8 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 13 | 0.58 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 5.1 | 0.75 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 5.1 | 0.55 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 5.1 | 0.58 | mg/kg | |
| 106-46-7 | 1,4-Dichlorohenzene | ND | 5.1 | 0.54 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 5.1 | 2.9 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 5.1 | 0.69 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 5.1 | 0.73 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 5.1 | 0.94 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 5.1 | 0.77 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 5.1 | 0.73 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-22-23-DUP | | |
| Lab Sample ID: | MC16445-4 | Date Sampled: | 11/29/12 |
| Matrix: | SO - Soil | Date Received: | 12/03/12 |
| Method: | SW846 8260B | Percent Solids: | 80.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 5.1 | 0.95 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 13 | 0.59 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 13 | 2.2 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 13 | 0.67 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 5.1 | 0.43 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 5.1 | 1.3 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 64 | 64 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 13 | 1.7 | mg/kg | |
| 100-41-4 | Ethylbenzene | 329 | 5.1 | 0.62 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 13 | 1.2 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 13 | 1.3 | mg/kg | |
| 98-82-8 | Isopropylbenzene | 28.8 | 13 | 0.58 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | 6.55 | 13 | 0.45 | mg/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 5.1 | 0.73 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 13 | 1.3 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 13 | 1.3 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 5.1 | 3.0 | mg/kg | |
| 91-20-3 | Naphthalene | 39.8 | 13 | 3.2 | mg/kg | |
| 103-65-1 | n-Propylbenzene | 88.7 | 13 | 2.6 | mg/kg | |
| 100-42-5 | Styrene | ND | 13 | 0.60 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 13 | 2.5 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 5.1 | 1.1 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 5.1 | 0.58 | mg/kg | |
| 108-88-3 | Toluene | 318 | 13 | 2.2 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 13 | 0.60 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 13 | 0.58 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 5.1 | 0.80 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 5.1 | 1.9 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 5.1 | 0.54 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 5.1 | 0.77 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 13 | 0.74 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 348 | 13 | 0.57 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 99.2 | 13 | 0.54 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 13 | 1.4 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 5.1 | 0.69 | mg/kg | |
| | m,p-Xylene | 742 | 5.1 | 2.0 | mg/kg | |
| 95-47-6 | o-Xylene | 339 | 5.1 | 0.61 | mg/kg | |
| 1330-20-7 | Xylene (total) | 1080 | 5.1 | 0.61 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-22-23-DUP | | |
| Lab Sample ID: | MC16445-4 | Date Sampled: | 11/29/12 |
| Matrix: | SO - Soil | Date Received: | 12/03/12 |
| Method: | SW846 8260B | Percent Solids: | 80.7 |
| Project: | URSMOSTL: Roxana Drilliug, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 108% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-22-23-DUP | | |
| Lab Sample ID: | MC16445-4 | Date Sampled: | 11/29/12 |
| Matrix: | SO - Soil | Date Received: | 12/03/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 80.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19742.D | 1 | 12/10/12 | AP | 12/10/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.4 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.003I | 0.00I4 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0031 | 0.0012 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 72% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 82% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-22-39 | | |
| **Lab Sample ID:** | MC16445-5 | **Date Sampled:** | 11/29/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/03/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | 77.6 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K65377.D | 1 | 12/05/12 | GK | n/a | n/a | MSK2153 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.63 g | 10.0 ml | 100 ul |
| Run #2 | | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.77 | 0.19 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 3.8 | 1.5 | mg/kg | |
| 107-13-1 | Acrylonitrile | ND | 3.8 | 0.19 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.077 | 0.045 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.77 | 0.034 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.77 | 0.057 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.31 | 0.032 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.31 | 0.31 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.31 | 0.080 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.77 | 0.19 | mg/kg | |
| 104-51-8 | n-Butylbenzene | 1.32 | 0.77 | 0.028 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | 0.166 | 0.77 | 0.035 | mg/kg | J |
| 98-06-6 | tert-Butylbenzene | 0.558 | 0.77 | 0.14 | mg/kg | J |
| 75-15-0 | Carbon disulfide | ND | 0.77 | 0.025 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.31 | 0.11 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.31 | 0.042 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.77 | 0.19 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.77 | 0.31 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.31 | 0.079 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.77 | 0.071 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.77 | 0.17 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.77 | 0.035 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.31 | 0.045 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.31 | 0.033 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.31 | 0.035 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.31 | 0.032 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.31 | 0.17 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.31 | 0.041 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.31 | 0.044 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.31 | 0.056 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.31 | 0.046 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.31 | 0.044 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-22-39 | | |
| **Lab Sample ID:** | MC16445-5 | **Date Sampled:** | 11/29/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/03/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | 77.6 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.31 | 0.057 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.77 | 0.035 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.77 | 0.13 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.77 | 0.040 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.31 | 0.026 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.31 | 0.076 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 3.8 | 3.8 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.77 | 0.10 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.521 | 0.31 | 0.037 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.77 | 0.071 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.77 | 0.077 | mg/kg | |
| 98-82-8 | Isopropylbenzene | 0.130 | 0.77 | 0.035 | mg/kg | J |
| 99-87-6 | p-Isopropyltoluene | 0.613 | 0.77 | 0.027 | mg/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.31 | 0.044 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.77 | 0.077 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.77 | 0.076 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.31 | 0.18 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.77 | 0.19 | mg/kg | |
| 103-65-1 | n-Propylbenzene | 0.309 | 0.77 | 0.16 | mg/kg | J |
| 100-42-5 | Styrene | ND | 0.77 | 0.036 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.77 | 0.15 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.31 | 0.065 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.31 | 0.035 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.77 | 0.13 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.77 | 0.036 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.77 | 0.035 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.31 | 0.048 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.31 | 0.11 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.31 | 0.032 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.31 | 0.047 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.77 | 0.045 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 5.33 | 0.77 | 0.034 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 3.07 | 0.77 | 0.033 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.77 | 0.086 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.31 | 0.042 | mg/kg | |
| | m,p-Xylene | 1.40 | 0.31 | 0.12 | mg/kg | |
| 95-47-6 | o-Xylene | 0.941 | 0.31 | 0.037 | mg/kg | |
| 1330-20-7 | Xylene (total) | 2.34 | 0.31 | 0.037 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-22-39 | | |
| Lab Sample ID: | MC16445-5 | Date Sampled: | 11/29/12 |
| Matrix: | SO - Soil | Date Received: | 12/03/12 |
| Method: | SW846 8260B | Percent Solids: | 77.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 105% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 120% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-22-39 | | |
| Lab Sample ID: | MC16445-5 | Date Sampled: | 11/29/12 |
| Matrix: | SO - Soil | Date Received: | 12/03/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 77.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19743.D | 1 | 12/10/12 | AP | 12/10/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.1 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0032 | 0.0014 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0032 | 0.0012 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 79% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 83% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16445-6 | Date Sampled: | 11/29/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/03/12 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | H59219.D | 1 | 12/13/12 | DFT | n/a | n/a | MSH1953 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 3.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.2 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.24 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.62 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.3 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.58 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.78 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.4 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.61 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.55 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.64 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.61 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.87 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.47 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.50 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 1.3 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.50 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.73 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.65 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.48 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.53 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.93 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.45 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.64 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.7 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.62 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.41 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.95 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | TRIP BLANK | | |
| **Lab Sample ID:** | MC16445-6 | **Date Sampled:** | 11/29/12 |
| **Matrix:** | AQ - Trip Blank Water | **Date Received:** | 12/03/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | n/a |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.72 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.64 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 1.6 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.91 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.45 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.20 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 15 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.81 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.51 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 2.1 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.50 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.57 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.41 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 2.9 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.1 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.83 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.58 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.45 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroetbane | ND | 5.0 | 0.57 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.60 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.42 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.51 | ug/l | |
| 87-61-6 | 1,2,3-Tricblorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.85 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.50 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.78 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.29 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.85 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.35 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.47 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.3 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.63 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.73 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.58 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.58 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | TRIP BLANK | | |
| **Lab Sample ID:** | MC16445-6 | **Date Sampled:** | 11/29/12 |
| **Matrix:** | AQ - Trip Blank Water | **Date Received:** | 12/03/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | n/a |
| **Project:** | URSMOSTL: Roxaua Drilling, Roxana, IL | | |

**VOA Special List**

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 104% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16445-6 | Date Sampled: | 11/29/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/03/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19940.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 32.9 ml | 2.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.016 | 0.014 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.016 | 0.011 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 117% | | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 106% | | 36-173% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES



## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

ACCUTEST LABORATORIES

# CHAIN OF CUSTODY

Accutest Laboratories of New England
495 Technology Center West, Building One
TEL: 508-481-6200 FAX: 508-481-7753
www.accutest.com

PAGE 1 OF 1

FED EX Tracking #: | Bottle Order Control #:
Accutest Quote #: | Accutest Job #: MC16445

**Client / Reporting Information**

Company Name: URS
Street Address:
City / State / Zip:
Project Contact: E. Kunkel | E-mail:
Phone #: | Fax #:
Sampler(s) Name(s): M. Miller, S. Jansen | Phone #:

**Project Information**

Project Name: Roxana Drilling
Street:
City: Roxana, IL
Project #: 256273500015
Client PO#:
Project Manager: D. Palmer

**Billing Information (If different from Report to)**

Company Name: URS
Street Address:
City / State / Zip:
Attention: | PO#:

**Requested Analysis (see TEST CODE sheet)**

| Accutest Sample # | Field ID / Point of Collection | MEOH/DI Vial # | Collection Date | Collection Time | Sampled by | Matrix | # of bottles | Number of preserved Bottles: HCl | NaOH | HNO3 | H2SO4 | NONE | DI Water | MEOH | ENCORE | En-Core | VOC 8011 | VOC 8260 | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | MW-22-12 | | 11/29/12 | 1345 | MPM | SO | 4 | | | | | X | | X | | X | X | X | |
| -2 | MW-22-12-Dup | | | 1345 | | | | | | | | X | | X | | X | X | X | |
| -3 | MW-22-23 | | | 1440 | | | | | | | | X | | X | | X | X | X | |
| -4 | MW-22-23-Dup | | | 1440 | | | | | | | | X | | X | | X | X | X | |
| -5 | MW-22-39 | | | 1450 | | | | | | | | X | | X | | X | X | X | |
| -6 | Trip Blank | | | | | | 4 | | | | | | | | | | X | X | |
| | | | | | | | | | | | | | | | | | | | 2K2, 2E, 10H, |

**Turnaround Time (Business days)**

Approved By (Accutest PM) / Date:

- [X] Std. 10 Business Days
- [ ] Std. 5 Business Days (By Contract only)
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Labtink

**Data Deliverable Information**

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [X] FULL T1 (Level 3+4)
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [X] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

**Comments / Special Instructions**

Sample Custody must be documented below each time samples change possession, including courier delivery.

| | Relinquished by Sampler | Date Time | Received By | Relinquished By | Date Time | Received By |
|---|---|---|---|---|---|---|
| 1 | Susan E Juan | 1420 11/30/12 | 1 Fedex | 2 FEDEX | 12-3-12 8?? | 2 |
| 3 | | | 3 | 4 | | 4 |
| 5 | | | 5 | | | |

Custody Seal #: | Intact / Not Intact | Preserved where applicable | On Ice | Cooler Temp: 0.3

5.1

**MC16445: Chain of Custody**
**Page 1 of 2**

ACCUTEST LABORATORIES

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC16445 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 12/3/2012 Delivery Method: Client Service Action Required at Login: No

Project: ROXANA DRILLING No. Coolers: 1 Airbill #'s:

| Cooler Security | Y | or | N | | Y | or | N |
|---|---|---|---|---|---|---|---|
| 1 Custody Seals Present | ☑ | | ☐ | 3. COC Present | ☑ | | ☐ |
| 2 Custody Seals Intact | ☑ | | ☐ | 4. Smpl Dates/Time OK | ☑ | | ☐ |

| Cooler Temperature | Y | or | N |
|---|---|---|---|
| 1 Temp criteria achieved: | ☑ | | ☐ |
| 2 Cooler temp verification. | Infared gun | | |
| 3 Cooler media | ice (bag) | | |

| Quality Control Preservatio | Y | or | N | N/A |
|---|---|---|---|---|
| 1 Trip Blank present / cooler | ☐ | | ☐ | ☑ |
| 2. Trip Blank listed on COC | ☐ | | ☐ | ☑ |
| 3. Samples preserved properly | ☑ | | ☐ | |
| 4 VOCs headspace free | ☐ | | ☐ | ☑ |

| Sample Integrity - Documentation | Y | or | N |
|---|---|---|---|
| 1 Sample labels present on bottles | ☑ | | ☐ |
| 2 Container labeling complete | ☑ | | ☐ |
| 3 Sample container label / COC agree | ☑ | | ☐ |

| Sample Integrity - Condition | Y | or | N |
|---|---|---|---|
| 1. Sample recvd within HT | ☑ | | ☐ |
| 2. All containers accounted for | ☑ | | ☐ |
| 3 Condition of sample | Intact | | |

| Sample Integrity - Instructions | Y | or | N | N/A |
|---|---|---|---|---|
| 1 Analysis requested is clear. | ☑ | | ☐ | |
| 2 Bottles received for unspecified tests | ☐ | | ☑ | |
| 3 Sufficient volume recvd for analysis | ☑ | | ☐ | |
| 4. Compositing instructions clear | ☐ | | ☐ | ☑ |
| 5 Filtering instructions clear. | ☐ | | ☐ | ☑ |

Comments

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5.1

## MC16445: Chain of Custody
## Page 2 of 2

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC16445

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562735.00015



| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC16445-1 Collected: 29-NOV-12 13:45 By: MMSJ Received: 03-DEC-12 By: MW-22-12 | | | | | | |
| MC16445-1 | SM21 2540 B MOD. | 04-DEC-12 | MC | | | %SOL |
| MC16445-1 | SW846 8260B | 06-DEC-12 21:30 | AMY | | | V8260SL+ |
| MC16445-1 | SW846 8011 | 10-DEC-12 00:44 | AP | 10-DEC-12 | NK | V8011SL |
| MC16445-2 Collected: 29-NOV-12 13:45 By: MMSJ Received: 03-DEC-12 By: MW-22-12-DUP | | | | | | |
| MC16445-2 | SM21 2540 B MOD. | 04-DEC-12 | MC | | | %SOL |
| MC16445-2 | SW846 8260B | 06-DEC-12 22:00 | AMY | | | V8260SL+ |
| MC16445-2 | SW846 8011 | 10-DEC-12 01:09 | AP | 10-DEC-12 | NK | V8011SL |
| MC16445-3 Collected: 29-NOV-12 14:40 By: MMSJ Received: 03-DEC-12 By: MW-22-23 | | | | | | |
| MC16445-3 | SM21 2540 B MOD. | 04-DEC-12 | MC | | | %SOL |
| MC16445-3 | SW846 8260B | 05-DEC-12 14:07 | GK | | | V8260SL+ |
| MC16445-3 | SW846 8011 | 10-DEC-12 01:33 | AP | 10-DEC-12 | NK | V8011SL |
| MC16445-4 Collected: 29-NOV-12 14:40 By: MMSJ Received: 03-DEC-12 By: MW-22-23-DUP | | | | | | |
| MC16445-4 | SM21 2540 B MOD. | 04-DEC-12 | MC | | | %SOL |
| MC16445-4 | SW846 8260B | 05-DEC-12 14:35 | GK | | | V8260SL+ |
| MC16445-4 | SW846 8011 | 10-DEC-12 01:58 | AP | 10-DEC-12 | NK | V8011SL |
| MC16445-5 Collected: 29-NOV-12 14:50 By: MMSJ Received: 03-DEC-12 By: MW-22-39 | | | | | | |
| MC16445-5 | SM21 2540 B MOD. | 04-DEC-12 | MC | | | %SOL |
| MC16445-5 | SW846 8260B | 05-DEC-12 15:02 | GK | | | V8260SL+ |
| MC16445-5 | SW846 8011 | 10-DEC-12 02:23 | AP | 10-DEC-12 | NK | V8011SL |
| MC16445-6 Collected: 29-NOV-12 00:00 By: MMSJ Received: 03-DEC-12 By: TRIP BLANK | | | | | | |
| MC16445-6 | SW846 8260B | 13-DEC-12 19:02 | DFT | | | V8260SL+ |
| MC16445-6 | SW846 8011 | 13-DEC-12 21:17 | AP | 13-DEC-12 | BJ | V8011SL |

# Accutest Internal Chain of Custody



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 12/03/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16445-1.1 | Walk In Ref #5 | Miranda Cardullo | 12/04/12 16:11 | Retrieve from Storage |
| MC16445-1.1 | Miranda Cardullo | Walk In Ref #5 | 12/04/12 16:47 | Return to Storage |
| MC16445-1.1 | Walk In Ref #5 | Michael Rolo | 12/07/12 09:01 | Retrieve from Storage |
| MC16445-1.1 | Michael Rolo | Walk In Ref #5 | 12/07/12 09:01 | Return to Storage |
| MC16445-1.1 | Walk In Ref #5 | Chris Cataldo | 12/08/12 10:32 | Retrieve from Storage |
| MC16445-1.1 | Chris Cataldo | Walk In Ref #5 | 12/08/12 21:08 | Return to Storage |
| MC16445-1.1 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16445-1.3 | VOC Ref #10 | Amy Min Yang | 12/06/12 16:01 | Retrieve from Storage |
| MC16445-1.3 | Amy Min Yang | GCMSM | 12/06/12 16:01 | Load on Instrument |
| MC16445-1.3 | GCMSM | Amy Min Yang | 01/15/13 12:38 | Unload from Instrument |
| MC16445-1.3 | Amy Min Yang | Freezer #6 | 01/15/13 12:38 | Return to Storage |
| MC16445-1.3 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16445-1.4 | VOC Ref #10 | Gary Krasinski | 12/04/12 12:35 | Retrieve from Storage |
| MC16445-1.4 | Gary Krasinski | VOC Ref #10 | 12/05/12 08:45 | Return to Storage |
| MC16445-1.4 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16445-2.1 | Walk In Ref #5 | Miranda Cardullo | 12/04/12 16:11 | Retrieve from Storage |
| MC16445-2.1 | Miranda Cardullo | Walk In Ref #5 | 12/04/12 16:47 | Return to Storage |
| MC16445-2.1 | Walk In Ref #5 | Michael Rolo | 12/07/12 09:01 | Retrieve from Storage |
| MC16445-2.1 | Michael Rolo | Walk In Ref #5 | 12/07/12 09:01 | Return to Storage |
| MC16445-2.1 | Walk In Ref #5 | Chris Cataldo | 12/08/12 10:32 | Retrieve from Storage |
| MC16445-2.1 | Chris Cataldo | Walk In Ref #5 | 12/08/12 21:08 | Return to Storage |
| MC16445-2.1 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16445-2.2 | VOC Ref #10 | Amy Min Yang | 12/06/12 16:01 | Retrieve from Storage |
| MC16445-2.2 | Amy Min Yang | GCMSM | 12/06/12 16:01 | Load on Instrument |
| MC16445-2.2 | GCMSM | Amy Min Yang | 01/15/13 12:38 | Unload from Instrument |
| MC16445-2.2 | Amy Min Yang | Freezer #6 | 01/15/13 12:38 | Return to Storage |
| MC16445-2.2 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16445-2.4 | VOC Ref #10 | Gary Krasinski | 12/04/12 12:35 | Retrieve from Storage |
| MC16445-2.4 | Gary Krasinski | VOC Ref #10 | 12/05/12 08:45 | Return to Storage |
| MC16445-2.4 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16445-3.1 | Walk In Ref #5 | Miranda Cardullo | 12/04/12 16:11 | Retrieve from Storage |
| MC16445-3.1 | Miranda Cardullo | Walk In Ref #5 | 12/04/12 16:47 | Return to Storage |
| MC16445-3.1 | Walk In Ref #5 | Michael Rolo | 12/07/12 09:01 | Retrieve from Storage |
| MC16445-3.1 | Michael Rolo | Walk In Ref #5 | 12/07/12 09:01 | Return to Storage |
| MC16445-3.1 | Walk In Ref #5 | Chris Cataldo | 12/08/12 10:32 | Retrieve from Storage |
| MC16445-3.1 | Chris Cataldo | Walk In Ref #5 | 12/08/12 21:08 | Return to Storage |
| MC16445-3.1 | Scott Parsick | | 02/13/13 11:50 | Disposed |

5.3

# Accutest Internal Chain of Custody



**Job Number:** MC16445
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL
**Received:** 12/03/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16445-3.4 | VOC Ref #10 | Gary Krasinski | 12/04/12 12:35 | Retrieve from Storage |
| MC16445-3.4 | Gary Krasinski | VOC Ref #10 | 12/06/12 08:47 | Return to Storage |
| MC16445-3.4 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16445-4.1 | Walk In Ref #5 | Miranda Cardullo | 12/04/12 16:11 | Retrieve from Storage |
| MC16445-4.1 | Miranda Cardullo | Walk In Ref #5 | 12/04/12 16:47 | Return to Storage |
| MC16445-4.1 | Walk In Ref #5 | Michael Rolo | 12/07/12 09:01 | Retrieve from Storage |
| MC16445-4.1 | Michael Rolo | Walk In Ref #5 | 12/07/12 09:01 | Return to Storage |
| MC16445-4.1 | Walk In Ref #5 | Chris Cataldo | 12/08/12 10:32 | Retrieve from Storage |
| MC16445-4.1 | Chris Cataldo | Walk In Ref #5 | 12/08/12 21:08 | Return to Storage |
| MC16445-4.1 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16445-4.4 | VOC Ref #10 | Gary Krasinski | 12/04/12 12:35 | Retrieve from Storage |
| MC16445-4.4 | Gary Krasinski | VOC Ref #10 | 12/06/12 08:47 | Return to Storage |
| MC16445-4.4 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16445-5.1 | Walk In Ref #5 | Miranda Cardullo | 12/04/12 16:11 | Retrieve from Storage |
| MC16445-5.1 | Miranda Cardullo | Walk In Ref #5 | 12/04/12 16:47 | Return to Storage |
| MC16445-5.1 | Walk In Ref #5 | Michael Rolo | 12/07/12 09:01 | Retrieve from Storage |
| MC16445-5.1 | Michael Rolo | Walk In Ref #5 | 12/07/12 09:01 | Return to Storage |
| MC16445-5.1 | Walk In Ref #5 | Chris Cataldo | 12/08/12 10:32 | Retrieve from Storage |
| MC16445-5.1 | Chris Cataldo | Walk In Ref #5 | 12/08/12 21:08 | Return to Storage |
| MC16445-5.1 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16445-5.4 | VOC Ref #10 | Gary Krasinski | 12/04/12 12:35 | Retrieve from Storage |
| MC16445-5.4 | Gary Krasinski | VOC Ref #10 | 12/06/12 08:47 | Return to Storage |
| MC16445-5.4 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16445-6.2 | VOC Ref #2 | Amy Min Yang | 12/13/12 15:11 | Retrieve from Storage |
| MC16445-6.2 | Amy Min Yang | GCMSH | 12/13/12 15:11 | Load on Instrument |
| MC16445-6.2 | GCMSH | Jugal Patel | 12/14/12 16:54 | Unload from Instrument |
| MC16445-6.2 | Jugal Patel | VOC Ref #2 | 12/14/12 16:54 | Return to Storage |
| MC16445-6.2 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16445-6.3 | VOC Ref #2 | Bijan Jafari | 12/13/12 04:39 | Retrieve from Storage |
| MC16445-6.3 | Bijan Jafari | | 12/14/12 17:43 | Depleted |

5.3

New England ACCUTEST LABORATORIES

## GC/MS Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2153-MB | K65367.D | 1 | 12/05/12 | GK | n/a | n/a | MSK2153 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-3, MC16445-4, MC16445-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 63 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 500 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 1300 | 63 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 11 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 19 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 11 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 100 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 26 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 63 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 9.2 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 11 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 44 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 8.2 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 36 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 14 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 63 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 100 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 26 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 23 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 55 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 11 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 15 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 57 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 14 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 14 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 18 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 15 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 19 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 12 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 43 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 13 | ug/kg | |

# Method Blank Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2153-MB | K65367.D | 1 | 12/05/12 | GK | n/a | n/a | MSK2153 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-3, MC16445-4, MC16445-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 8.5 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 25 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 34 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 12 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 23 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 25 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 11 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.9 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 14 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 25 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 25 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 58 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 63 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 51 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 12 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 21 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 11 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 42 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 12 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 11 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 16 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 37 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 11 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 15 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 15 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 11 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 11 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 28 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 14 | ug/kg | |
| | m,p-Xylene | ND | 100 | 39 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 12 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 12 | ug/kg | |

6.1.1

# Method Blank Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2153-MB | K65367.D | 1 | 12/05/12 | GK | n/a | n/a | MSK2153 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-3, MC16445-4, MC16445-5

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 97% | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/kg | |

6.1.1

# Method Blank Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1788-MB | M52739.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-1, MC16445-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 25 | 1.3 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.29 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.37 | ug/kg | |
| 75-27-4 | Bromodichloromethaue | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 2.0 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.52 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.88 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.16 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.73 | ug/kg | |
| 108-90-7 | Chlorobenzeue | ND | 2.0 | 0.28 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 1.3 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 2.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.52 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.46 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.23 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.30 | ng/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.22 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.23 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.21 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.27 | ug/kg | |
| 107-06-2 | 1,2-Dicbloroethane | ND | 2.0 | 0.29 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.37 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.37 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.23 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.87 | ug/kg | |
| 563-58-6 | 1,1-Dicbloropropeue | ND | 5.0 | 0.26 | ug/kg | |

# Method Blank Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1788-MB | M52739.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-1, MC16445-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 0.17 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.50 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.68 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.24 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 0.46 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 0.50 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.29 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.50 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.49 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 1.2 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 1.3 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 1.0 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.23 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.43 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.23 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.85 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 0.24 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 0.23 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.31 | ng/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.73 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.30 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.29 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.22 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.21 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 0.56 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.27 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.79 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.24 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.24 | ug/kg | |

# Method Blank Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1788-MB | M52739.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |

6.1.2

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-1, MC16445-2

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 97% | 70-130% |
| 2037-26-5 | Toluene-D8 | 113% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 94% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/kg | |

# Method Blank Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSH1953-MB | H59206.D | 1 | 12/13/12 | DFT | n/a | n/a | MSH1953 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 3.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.2 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.24 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.62 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.3 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.58 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.78 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.4 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.61 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.55 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.64 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.61 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.87 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.47 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.50 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 1.3 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.50 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.73 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.65 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.48 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.53 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.93 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.45 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.64 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.7 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.62 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.41 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.64 | ng/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.95 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.72 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.64 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 1.6 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.91 | ug/l | |

# Method Blank Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSH1953-MB | H59206.D | 1 | 12/13/12 | DFT | n/a | n/a | MSH1953 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.45 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.20 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 15 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.81 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.51 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 2.1 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.50 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.57 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.41 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 2.9 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.1 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.83 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.58 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.45 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.57 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.60 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.42 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.51 | ug/l | |
| 87-61-6 | 1,2,3-Tricblorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.85 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.50 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.78 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.29 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.85 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 1.0 | 0.35 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 1.0 | 0.47 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.3 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.63 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.73 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.58 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.58 | ug/l | |

6.1.3

# Method Blank Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSH1953-MB | H59206.D | 1 | 12/13/12 | DFT | n/a | n/a | MSH1953 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-6

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 103% | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 104% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

# Blank Spike Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSH1953-BS | H59204.D | 1 | 12/13/12 | DFT | n/a | n/a | MSH1953 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-6

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 63.4 | 127 | 70-130 |
| 107-02-8 | Acrolein | 250 | 133 | 53* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 43.1 | 86 | 70-130 |
| 71-43-2 | Benzene | 50 | 48.6 | 97 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 50.7 | 101 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 51.3 | 103 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 57.4 | 115 | 70-130 |
| 75-25-2 | Bromoform | 50 | 56.0 | 112 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 48.9 | 98 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 52.5 | 105 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 53.1 | 106 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 54.8 | 110 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 56.5 | 113 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 51.9 | 104 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 63.0 | 126 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 50.8 | 102 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 48.9 | 98 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 32.5 | 65* a | 70-130 |
| 67-66-3 | Chloroform | 50 | 55.1 | 110 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 53.6 | 107 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 55.4 | 111 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 57.1 | 114 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 51.0 | 102 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 53.3 | 107 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 54.2 | 108 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 49.8 | 100 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 37.7 | 75 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 53.9 | 108 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 54.1 | 108 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 53.0 | 106 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 50.7 | 101 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 50.1 | 100 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 48.3 | 97 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 46.4 | 93 | 70-130 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 68.3 | 137* a | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 51.0 | 102 | 70-130 |

* = Outside of Control Limits.

6.2.1

6

# Blank Spike Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSH1953-BS | H59204.D | 1 | 12/13/12 | DFT | n/a | n/a | MSH1953 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-6

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 49.7 | 99 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 54.1 | 108 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 213 | 85 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 49.4 | 99 | 77-137 |
| 100-41-4 | Ethylbenzene | 50 | 49.2 | 98 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 49.6 | 99 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 53.2 | 106 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 55.5 | 111 | 70-130 |
| 99-87-6 | p-Isopropyltolnene | 50 | 51.7 | 103 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 51.3 | 103 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 45.5 | 91 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 49.3 | 99 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 52.2 | 104 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 43.6 | 87 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 55.8 | 112 | 70-130 |
| 100-42-5 | Styrene | 50 | 51.5 | 103 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 61.1 | 122 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 50.7 | 101 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 46.9 | 94 | 70-130 |
| 108-88-3 | Toluene | 50 | 48.8 | 98 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 44.2 | 88 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 46.8 | 94 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 58.2 | 116 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 49.0 | 98 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 49.9 | 100 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 52.6 | 105 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 51.7 | 103 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 50.1 | 100 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 50.4 | 101 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 48.8 | 98 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 50.9 | 102 | 70-130 |
| | m,p-Xylene | 100 | 102 | 102 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 52.7 | 105 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 155 | 103 | 70-130 |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSH1953-BS | H59204.D | 1 | 12/13/12 | DFT | n/a | n/a | MSH1953 |

6.2.1

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-6

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 109% | 70-130% |
| 2037-26-5 | Toluene-D8 | 100% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 104% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2153-BS | K65364.D | 1 | 12/05/12 | GK | n/a | n/a | MSK2153 |
| MSK2153-BSD | K65365.D | 1 | 12/05/12 | GK | n/a | n/a | MSK2153 |

6.3.1

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-3, MC16445-4, MC16445-5

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 1780 | 71 | 1660 | 66* a | 7 | 70-130/25 |
| 107-02-8 | Acrolein | 12500 | ND | 0* b | ND | 0* b | nc | 70-130/25 |
| 107-13-1 | Acrylonitrile | 2500 | 2360 | 94 | 2270 | 91 | 4 | 70-130/25 |
| 71-43-2 | Benzene | 2500 | 2490 | 100 | 2550 | 102 | 2 | 70-130/25 |
| 108-86-1 | Bromobenzene | 2500 | 2540 | 102 | 2600 | 104 | 2 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 2500 | 2310 | 92 | 2300 | 92 | 0 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 2500 | 2570 | 103 | 2580 | 103 | 0 | 70-130/25 |
| 75-25-2 | Bromoform | 2500 | 2390 | 96 | 2840 | 114 | 17 | 70-130/25 |
| 74-83-9 | Bromomethane | 2500 | 2510 | 100 | 2340 | 94 | 7 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 1980 | 79 | 2020 | 81 | 2 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 2500 | 2640 | 106 | 2630 | 105 | 0 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2990 | 120 | 2840 | 114 | 5 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 2500 | 3000 | 120 | 2830 | 113 | 6 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 2500 | 2570 | 103 | 2620 | 105 | 2 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2460 | 98 | 2500 | 100 | 2 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 2500 | 2590 | 104 | 2880 | 115 | 11 | 70-130/25 |
| 75-00-3 | Chloroethane | 2500 | 2410 | 96 | 2400 | 96 | 0 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 1260 | 50 | 1250 | 50 | 1 | 10-160/25 |
| 67-66-3 | Chloroform | 2500 | 2490 | 100 | 2510 | 100 | 1 | 70-130/25 |
| 74-87-3 | Chloromethane | 2500 | 3160 | 126 | 2750 | 110 | 14 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2940 | 118 | 2690 | 108 | 9 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 2500 | 3030 | 121 | 2800 | 112 | 8 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 2500 | 2500 | 100 | 2800 | 112 | 11 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2770 | 111 | 2710 | 108 | 2 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2740 | 110 | 2800 | 112 | 2 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2570 | 103 | 2550 | 102 | 1 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 2070 | 83 | 1890 | 76 | 9 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2520 | 101 | 2550 | 102 | 1 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2560 | 102 | 2510 | 100 | 2 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2530 | 101 | 2590 | 104 | 2 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2360 | 94 | 2380 | 95 | 1 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2350 | 94 | 2370 | 95 | 1 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2510 | 100 | 2550 | 102 | 2 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2570 | 103 | 2660 | 106 | 3 | 70-130/25 |
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2530 | 101 | 2560 | 102 | 1 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2560 | 102 | 2610 | 104 | 2 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2153-BS | K65364.D | 1 | 12/05/12 | GK | n/a | n/a | MSK2153 |
| MSK2153-BSD | K65365.D | 1 | 12/05/12 | GK | n/a | n/a | MSK2153 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-3, MC16445-4, MC16445-5

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2530 | 101 | 2510 | 100 | 1 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2710 | 108 | 2620 | 105 | 3 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 12500 | 13100 | 105 | 14100 | 113 | 7 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2560 | 102 | 2290 | 92 | 11 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 2500 | 2560 | 102 | 2670 | 107 | 4 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2840 | 114 | 2830 | 113 | 0 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 2500 | 2170 | 87 | 2090 | 84 | 4 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 2500 | 2960 | 118 | 2880 | 115 | 3 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2850 | 114 | 2770 | 111 | 3 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2530 | 101 | 2520 | 101 | 0 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 2360 | 94 | 2270 | 91 | 4 | 70-130/25 |
| 74-95-3 | Methylene bromide | 2500 | 2530 | 101 | 2490 | 100 | 2 | 70-130/25 |
| 75-09-2 | Methylene chloride | 2500 | 2510 | 100 | 2560 | 102 | 2 | 70-130/25 |
| 91-20-3 | Naphthalene | 2500 | 2320 | 93 | 2160 | 86 | 7 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 2500 | 3010 | 120 | 2760 | 110 | 9 | 70-130/25 |
| 100-42-5 | Styrene | 2500 | 2460 | 98 | 2610 | 104 | 6 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2470 | 99 | 2840 | 114 | 14 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2780 | 111 | 2350 | 94 | 17 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 2500 | 2280 | 91 | 2750 | 110 | 19 | 70-130/25 |
| 108-88-3 | Toluene | 2500 | 2510 | 100 | 2430 | 97 | 3 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 2340 | 94 | 2230 | 89 | 5 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2530 | 101 | 2430 | 97 | 4 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2520 | 101 | 2520 | 101 | 0 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2500 | 100 | 2350 | 94 | 6 | 70-130/25 |
| 79-01-6 | Trichloroethene | 2500 | 2460 | 98 | 2490 | 100 | 1 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2440 | 98 | 2470 | 99 | 1 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2780 | 111 | 2350 | 94 | 17 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2760 | 110 | 2610 | 104 | 6 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2700 | 108 | 2590 | 104 | 4 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 2500 | 2310 | 92 | 2260 | 90 | 2 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 2500 | 2650 | 106 | 2440 | 98 | 8 | 70-130/25 |
| | m,p-Xylene | 5000 | 5270 | 105 | 5730 | 115 | 8 | 70-130/25 |
| 95-47-6 | o-Xylene | 2500 | 2770 | 111 | 2950 | 118 | 6 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 7500 | 8050 | 107 | 8680 | 116 | 8 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2153-BS | K65364.D | 1 | 12/05/12 | GK | n/a | n/a | MSK2153 |
| MSK2153-BSD | K65365.D | 1 | 12/05/12 | GK | n/a | n/a | MSK2153 |

6.3.1

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-3, MC16445-4, MC16445-5

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | 98% | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | 100% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 112% | 104% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits due standard degradation. Refer to Continuing Calibration.

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1788-BS | M52736.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |
| MSM1788-BSD | M52737.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |

6.3.2

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-1, MC16445-2

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 29.2 | 58* a | 30.4 | 61* a | 4 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 109 | 44* a | 114 | 46* a | 4 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 46.5 | 93 | 48.3 | 97 | 4 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 46.1 | 92 | 47.7 | 95 | 3 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 42.1 | 84 | 44.1 | 88 | 5 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 42.1 | 84 | 43.4 | 87 | 3 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 43.9 | 88 | 45.2 | 90 | 3 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 39.9 | 80 | 41.1 | 82 | 3 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 46.2 | 92 | 47.7 | 95 | 3 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 37.6 | 75 | 40.6 | 81 | 8 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 48.4 | 97 | 49.6 | 99 | 2 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 47.2 | 94 | 49.3 | 99 | 4 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 47.3 | 95 | 49.7 | 99 | 5 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 51.5 | 103 | 53.7 | 107 | 4 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 50.9 | 102 | 52.7 | 105 | 3 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 41.9 | 84 | 43.7 | 87 | 4 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 48.7 | 97 | 50.1 | 100 | 3 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 44.2 | 88 | 43.6 | 87 | 1 | 10-160/25 |
| 67-66-3 | Chloroform | 50 | 45.6 | 91 | 47.5 | 95 | 4 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 51.0 | 102 | 53.1 | 106 | 4 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 42.9 | 86 | 44.4 | 89 | 3 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 42.9 | 86 | 44.4 | 89 | 3 | 70-130/25 |
| 124-48-1 | Dihromochloromethane | 50 | 41.1 | 82 | 43.5 | 87 | 6 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 39.8 | 80 | 40.5 | 81 | 2 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 40.4 | 81 | 41.6 | 83 | 3 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 40.5 | 81 | 41.7 | 83 | 3 | 70-130/25 |
| 75-71-8 | Dichlorodiflnoromethane | 50 | 48.4 | 97 | 51.5 | 103 | 6 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 46.9 | 94 | 49.3 | 99 | 5 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 40.8 | 82 | 42.7 | 85 | 5 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 51.9 | 104 | 55.3 | 111 | 6 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 44.5 | 89 | 46.6 | 93 | 5 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 46.9 | 94 | 50.2 | 100 | 7 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 43.3 | 87 | 45.3 | 91 | 5 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 40.7 | 81 | 43.2 | 86 | 6 | 70-130/25 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 49.9 | 100 | 51.5 | 103 | 3 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 50.9 | 102 | 53.4 | 107 | 5 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1788-BS | M52736.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |
| MSM1788-BSD | M52737.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-1, MC16445-2

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 41.5 | 83 | 44.1 | 88 | 6 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 43.3 | 87 | 46.2 | 92 | 6 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 260 | 104 | 266 | 106 | 2 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 47.0 | 94 | 49.2 | 98 | 5 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 50 | 47.1 | 94 | 49.7 | 99 | 5 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 48.9 | 98 | 49.8 | 100 | 2 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 54.0 | 108 | 54.9 | 110 | 2 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 47.0 | 94 | 49.2 | 98 | 5 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 49.6 | 99 | 51.1 | 102 | 3 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 38.7 | 77 | 40.5 | 81 | 5 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 50.5 | 101 | 52.1 | 104 | 3 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 41.6 | 83 | 42.9 | 86 | 3 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 41.8 | 84 | 43.0 | 86 | 3 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 48.8 | 98 | 48.1 | 96 | 1 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 46.2 | 92 | 47.7 | 95 | 3 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 43.4 | 87 | 45.8 | 92 | 5 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 43.4 | 87 | 44.4 | 89 | 2 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 42.3 | 85 | 42.9 | 86 | 1 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 48.5 | 97 | 51.9 | 104 | 7 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 48.3 | 97 | 51.2 | 102 | 6 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 40.2 | 80 | 39.9 | 80 | 1 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 40.0 | 80 | 40.1 | 80 | 0 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 50.2 | 100 | 52.7 | 105 | 5 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 41.3 | 83 | 43.4 | 87 | 5 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 47.8 | 96 | 50.8 | 102 | 6 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 52.0 | 104 | 54.5 | 109 | 5 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 44.3 | 89 | 45.2 | 90 | 2 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 45.7 | 91 | 47.5 | 95 | 4 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 46.6 | 93 | 48.4 | 97 | 4 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 29.0 | 58* a | 27.9 | 56* a | 4 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 47.8 | 96 | 49.7 | 99 | 4 | 70-130/25 |
| | m,p-Xylene | 100 | 92.2 | 92 | 97.7 | 98 | 6 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 45.1 | 90 | 47.1 | 94 | 4 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 137 | 91 | 145 | 97 | 6 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1788-BS | M52736.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |
| MSM1788-BSD | M52737.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-1, MC16445-2

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | 101% | 70-130% |
| 2037-26-5 | Toluene-D8 | 113% | 115% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | 96% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

6.3.2

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| JB20375-3MS | K65378.D | 1 | I2/05/12 | GK | n/a | n/a | MSK2153 |
| JB20375-3MSD | K65379.D | 1 | 12/05/12 | GK | n/a | n/a | MSK2153 |
| JB20375-3 [a] | K65373.D | I | 12/05/12 | GK | n/a | n/a | MSK2153 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-3, MC16445-4, MC16445-5

| CAS No. | Compound | JB20375-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 3110 | 1730 | 56* [b] | 1910 | 61* [b] | 10 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 15500 | ND | 0* [c] | ND | 0* [c] | nc | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 3110 | 2450 | 79 | 2360 | 76 | 4 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 3110 | 2860 | 92 | 2940 | 95 | 3 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 3110 | 3260 | 105 | 3340 | 107 | 2 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 3110 | 2790 | 90 | 2830 | 91 | 1 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 3110 | 3040 | 98 | 3090 | 99 | 2 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 3110 | 3570 | 115 | 3590 | 116 | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 3110 | 2850 | 92 | 2960 | 95 | 4 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 3110 | 1960 | 63* [b] | 2040 | 66* [b] | 4 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | 88.2 | J | 3110 | 3290 | 103 | 3440 | 108 | 4 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | 43.6 | J | 3110 | 3560 | 113 | 3720 | 118 | 4 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 3110 | 3580 | 115 | 3720 | 120 | 4 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 3110 | 2850 | 92 | 2900 | 93 | 2 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 3110 | 3210 | 103 | 3280 | 106 | 2 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 3110 | 3540 | 114 | 3630 | 117 | 3 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 3110 | 2650 | 85 | 2640 | 85 | 0 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 3110 | 1350 | 43 | 1410 | 45 | 4 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 3110 | 2770 | 89 | 2840 | 91 | 2 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 3110 | 3410 | 110 | 3450 | 111 | 1 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 3110 | 3410 | 110 | 3480 | 112 | 2 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 3110 | 3520 | 113 | 3630 | 117 | 3 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 3110 | 3550 | 114 | 3560 | 115 | 0 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 3110 | 3400 | 109 | 3460 | 111 | 2 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 3110 | 3470 | 112 | 3600 | 116 | 4 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 3110 | 3180 | 102 | 3290 | 106 | 3 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 3110 | 2430 | 78 | 2490 | 80 | 2 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 3110 | 2690 | 87 | 2710 | 87 | 1 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 3110 | 2850 | 92 | 2960 | 95 | 4 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 3110 | 2970 | 96 | 3080 | 99 | 4 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 3110 | 2720 | 88 | 2790 | 90 | 3 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 3110 | 2670 | 86 | 2800 | 90 | 5 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 3110 | 2770 | 89 | 2910 | 94 | 5 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 3110 | 3140 | 101 | 3160 | 102 | 1 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 3110 | 2810 | 90 | 2870 | 92 | 2 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 3110 | 2910 | 94 | 3030 | 98 | 4 | 70-130/30 |

* = Outside of Control Limits.

6.4.1

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| JB20375-3MS | K65378.D | 1 | 12/05/12 | GK | n/a | n/a | MSK2153 |
| JB20375-3MSD | K65379.D | 1 | 12/05/12 | GK | n/a | n/a | MSK2153 |
| JB20375-3 [a] | K65373.D | 1 | 12/05/12 | GK | n/a | n/a | MSK2153 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-3, MC16445-4, MC16445-5

| CAS No. | Compound | JB20375-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 3110 | 2890 | 93 | 2890 | 93 | 0 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 3110 | 3070 | 99 | 3110 | 100 | 1 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 15500 | 12700 | 82 | 15900 | 102 | 22 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 3110 | 2810 | 90 | 2870 | 92 | 2 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 3110 | 3360 | 108 | 3460 | 111 | 3 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 3110 | 3500 | 113 | 3620 | 117 | 3 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 3110 | 2440 | 79 | 2540 | 82 | 4 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 3110 | 3550 | 114 | 3690 | 119 | 4 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | 51.9 | J | 3110 | 3460 | 110 | 3550 | 113 | 3 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 3110 | 2800 | 90 | 2760 | 89 | 1 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 3110 | 2450 | 79 | 2540 | 82 | 4 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 3110 | 2960 | 95 | 2970 | 96 | 0 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 3110 | 2820 | 91 | 2840 | 91 | 1 | 70-130/30 |
| 91-20-3 | Naphthalene | 88.5 | J | 3110 | 2840 | 89 | 2890 | 90 | 2 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 3110 | 3480 | 112 | 3590 | 116 | 3 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 3110 | 3270 | 105 | 3360 | 108 | 3 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 3110 | 3560 | 115 | 3640 | 117 | 2 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroetbane | ND | | 3110 | 3110 | 100 | 3140 | 101 | 1 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 3110 | 3380 | 109 | 3510 | 113 | 4 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 3110 | 3010 | 97 | 3080 | 99 | 2 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 3110 | 2700 | 87 | 2790 | 90 | 3 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 3110 | 2940 | 95 | 3030 | 98 | 3 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 3110 | 2920 | 94 | 2960 | 95 | 1 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 3110 | 2810 | 90 | 2860 | 92 | 2 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 3110 | 2970 | 96 | 3010 | 97 | 1 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 3110 | 2880 | 93 | 2980 | 96 | 3 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 3110 | 2990 | 96 | 3000 | 97 | 0 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 58.0 | J | 3110 | 3270 | 103 | 3420 | 108 | 4 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 3110 | 3210 | 103 | 3350 | 108 | 4 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 3110 | 2280 | 73 | 2300 | 74 | 1 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 3110 | 3500 | 113 | 3320 | 107 | 5 | 70-130/30 |
| | m,p-Xylene | ND | | 6210 | 7130 | 115 | 7310 | 118 | 2 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 3110 | 3670 | 118 | 3750 | 121 | 2 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 9320 | 10800 | 116 | 11100 | 119 | 3 | 70-130/30 |

* = Outside of Control Limits.

6.4.1

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| JB20375-3MS | K65378.D | 1 | 12/05/12 | GK | n/a | n/a | MSK2153 |
| JB20375-3MSD | K65379.D | 1 | 12/05/12 | GK | n/a | n/a | MSK2153 |
| JB20375-3 [a] | K65373.D | 1 | 12/05/12 | GK | n/a | n/a | MSK2153 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-3, MC16445-4, MC16445-5

| CAS No. | Surrogate Recoveries | MS | MSD | JB20375-3 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 95% | 97% | 101% | 70-130% |
| 2037-26-5 | Toluene-D8 | 100% | 101% | 104% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 104% | 105% | 108% | 70-130% |

(a) Sample analyzed past recommended hold time.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(c) Outside control limits due standard degradation. Refer to Continuing Calibration.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16395-2MS | M52748.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |
| MC16395-2MSD | M52749.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |
| MC16395-2 | M52747.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-1, MC16445-2

| CAS No. | Compound | MC16395-2 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 53 | 60.2 | 114 | 64.4 | 127 | 7 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 265 | 124 | 47* [a] | 126 | 50* [a] | 2 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 53 | 69.3 | 131* [b] | 69.4 | 137* [b] | 0 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 53 | 52.4 | 99 | 48.2 | 95 | 8 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 53 | 47.3 | 89 | 42.1 | 83 | 12 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 53 | 55.8 | 105 | 52.5 | 104 | 6 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 53 | 53.8 | 101 | 52.0 | 103 | 3 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 53 | 56.6 | 107 | 55.2 | 109 | 3 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 53 | 53.3 | 101 | 49.3 | 97 | 8 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 53 | 64.6 | 122 | 67.7 | 134* [a] | 5 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 53 | 45.0 | 85 | 35.3 | 70 | 24 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 53 | 43.7 | 82 | 35.8 | 71 | 20 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 53 | 42.8 | 81 | 37.5 | 74 | 13 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 53 | 55.7 | 105 | 49.6 | 98 | 12 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 53 | 52.9 | 100 | 48.0 | 95 | 10 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 53 | 47.2 | 89 | 41.8 | 83 | 12 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 53 | 54.1 | 102 | 50.0 | 99 | 8 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 53 | 39.9 | 75 | 38.5 | 76 | 4 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 53 | 52.8 | 100 | 49.3 | 97 | 7 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 53 | 60.0 | 113 | 55.1 | 109 | 9 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 53 | 43.0 | 81 | 37.0 | 73 | 15 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 53 | 43.6 | 82 | 37.5 | 74 | 15 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 53 | 55.7 | 105 | 52.6 | 104 | 6 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 53 | 41.0 | 77 | 35.7 | 70 | 14 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 53 | 41.6 | 78 | 35.3 | 70 | 16 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 53 | 42.0 | 79 | 36.6 | 72 | 14 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 53 | 55.8 | 105 | 50.3 | 99 | 10 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 53 | 53.2 | 100 | 48.3 | 95 | 10 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 53 | 54.2 | 102 | 51.6 | 102 | 5 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 53 | 57.5 | 108 | 52.1 | 103 | 10 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroetbene | ND | | 53 | 51.9 | 98 | 48.8 | 96 | 6 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 53 | 52.8 | 100 | 48.0 | 95 | 10 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 53 | 52.3 | 99 | 50.5 | 100 | 4 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 53 | 54.9 | 104 | 52.9 | 104 | 4 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 53 | 53.0 | 100 | 48.3 | 95 | 9 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 53 | 54.3 | 102 | 48.4 | 96 | 11 | 70-130/30 |

* = Outside of Control Limits.

6.4.2

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16395-2MS | M52748.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |
| MC16395-2MSD | M52749.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |
| MC16395-2 | M52747.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-1, MC16445-2

| CAS No. | Compound | MC16395-2 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 53 | 51.0 | 96 | 48.7 | 96 | 5 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 53 | 56.2 | 106 | 54.0 | 107 | 4 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 265 | 406 | 153* [a] | 393 | 155* [a] | 3 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 53 | 64.7 | 122 | 64.0 | 126 | 1 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 53 | 49.5 | 93 | 43.6 | 86 | 13 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 53 | 45.6 | 86 | 32.9 | 65* [a] | 32* [c] | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 53 | 74.0 | 140* [a] | 78.4 | 155* [a] | 6 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 53 | 45.6 | 86 | 39.4 | 78 | 15 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 53 | 46.7 | 88 | 38.5 | 76 | 19 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 53 | 51.1 | 96 | 50.4 | 99 | 1 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 53 | 71.0 | 134* [a] | 75.5 | 149* [a] | 6 | 70-130/30 |
| 74-95-3 | Methylene hromide | ND | | 53 | 57.3 | 108 | 55.9 | 110 | 2 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 53 | 49.9 | 94 | 47.4 | 94 | 5 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 53 | 46.6 | 88 | 42.5 | 84 | 9 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 53 | 43.9 | 83 | 37.2 | 73 | 17 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 53 | 48.0 | 91 | 42.2 | 83 | 13 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 53 | 50.7 | 96 | 47.0 | 93 | 8 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 53 | 58.2 | 110 | 58.0 | 114 | 0 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 53 | 52.2 | 98 | 45.1 | 89 | 15 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 53 | 52.9 | 100 | 48.3 | 95 | 9 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 53 | 39.2 | 74 | 31.9 | 63* [a] | 21 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 53 | 40.3 | 76 | 31.7 | 63* [a] | 24 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 53 | 53.8 | 101 | 48.6 | 96 | 10 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 53 | 56.1 | 106 | 55.8 | 110 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 53 | 53.5 | 101 | 48.4 | 96 | 10 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 53 | 55.5 | 105 | 50.9 | 100 | 9 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 53 | 61.7 | 116 | 61.2 | 121 | 1 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 53 | 44.6 | 84 | 38.4 | 76 | 15 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 53 | 45.1 | 85 | 37.9 | 75 | 17 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 53 | 44.8 | 85 | 41.0 | 81 | 9 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 53 | 51.7 | 98 | 47.3 | 93 | 9 | 70-130/30 |
| | m,p-Xylene | ND | | 106 | 96.6 | 91 | 84.9 | 84 | 13 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 53 | 47.0 | 89 | 42.3 | 84 | 11 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 159 | 144 | 91 | 127 | 84 | 13 | 70-130/30 |

* = Outside of Control Limits.

6.4.2

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16395-2MS | M52748.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |
| MC16395-2MSD | M52749.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |
| MC16395-2 | M52747.D | 1 | 12/06/12 | AMY | n/a | n/a | MSM1788 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-1, MC16445-2

| CAS No. | Surrogate Recoveries | MS | MSD | MC16395-2 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | 99% | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 112% | 114% | 113% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | 96% | 95% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.
(c) High RPD due to possible matrix interference and/or sample non-homogeneity.

* = Outside of Control Limits.

6.4.2

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16569-2MS | H59213.D | 5 | 12/13/12 | DFT | n/a | n/a | MSH1953 |
| MC16569-2MSD | H59214.D | 5 | 12/13/12 | DFT | n/a | n/a | MSH1953 |
| MC16569-2 | H59212.D | 1 | 12/13/12 | DFT | n/a | n/a | MSH1953 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-6

| CAS No. | Compound | MC16569-2 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 7.4 | | 250 | 173 | 66* [a] | 172 | 66* [a] | 1 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 1250 | 428 | 34* [b] | 426 | 34* [b] | 0 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 250 | 189 | 76 | 177 | 71 | 7 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 250 | 225 | 90 | 217 | 87 | 4 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 250 | 235 | 94 | 225 | 90 | 4 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 250 | 237 | 95 | 230 | 92 | 3 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 250 | 245 | 98 | 238 | 95 | 3 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 250 | 205 | 82 | 210 | 84 | 2 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 250 | 234 | 94 | 224 | 90 | 4 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 250 | 219 | 88 | 200 | 80 | 9 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 250 | 239 | 96 | 227 | 91 | 5 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 250 | 250 | 100 | 238 | 95 | 5 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 250 | 258 | 103 | 244 | 98 | 6 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 250 | 215 | 86 | 208 | 83 | 3 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 250 | 277 | 111 | 274 | 110 | 1 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 250 | 236 | 94 | 230 | 92 | 3 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 250 | 238 | 95 | 229 | 92 | 4 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 250 | 74.4 | 30* [b] | 71.6 | 29* [b] | 4 | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 250 | 246 | 98 | 237 | 95 | 4 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 250 | 264 | 106 | 248 | 99 | 6 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 250 | 250 | 100 | 240 | 96 | 4 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 250 | 260 | 104 | 246 | 98 | 6 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 250 | 214 | 86 | 213 | 85 | 0 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 250 | 241 | 96 | 233 | 93 | 3 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 250 | 249 | 100 | 234 | 94 | 6 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 250 | 224 | 90 | 214 | 86 | 5 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 250 | 187 | 75 | 177 | 71 | 5 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 250 | 249 | 100 | 239 | 96 | 4 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 250 | 236 | 94 | 232 | 93 | 2 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 250 | 254 | 102 | 243 | 97 | 4 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 250 | 232 | 93 | 228 | 91 | 2 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 250 | 236 | 94 | 224 | 90 | 5 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 250 | 224 | 90 | 219 | 88 | 2 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 250 | 218 | 87 | 216 | 86 | 1 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 250 | 304 | 122 | 292 | 117 | 4 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 250 | 243 | 97 | 235 | 94 | 3 | 70-130/30 |

* = Outside of Control Limits.

6.4.3

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16569-2MS | H59213.D | 5 | 12/13/12 | DFT | n/a | n/a | MSH1953 |
| MC16569-2MSD | H59214.D | 5 | 12/13/12 | DFT | n/a | n/a | MSH1953 |
| MC16569-2 | H59212.D | 1 | 12/13/12 | DFT | n/a | n/a | MSH1953 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-6

| CAS No. | Compound | MC16569-2 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 250 | 226 | 90 | 223 | 89 | 1 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 250 | 244 | 98 | 239 | 96 | 2 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 1250 | 1080 | 86 | 989 | 79 | 9 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 250 | 219 | 88 | 211 | 84 | 4 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 250 | 233 | 93 | 226 | 90 | 3 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 250 | 214 | 86 | 206 | 82 | 4 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 250 | 216 | 86 | 205 | 82 | 5 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 250 | 259 | 104 | 242 | 97 | 7 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 250 | 235 | 94 | 221 | 88 | 6 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 250 | 228 | 91 | 225 | 90 | 1 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 250 | 209 | 84 | 202 | 81 | 3 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 250 | 225 | 90 | 218 | 87 | 3 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 250 | 236 | 94 | 235 | 94 | 0 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 250 | 185 | 74 | 187 | 75 | 1 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 250 | 260 | 104 | 244 | 98 | 6 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 250 | 214 | 86 | 211 | 84 | 1 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 250 | 274 | 110 | 274 | 110 | 0 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 250 | 237 | 95 | 229 | 92 | 3 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 250 | 225 | 90 | 216 | 86 | 4 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 250 | 224 | 90 | 218 | 87 | 3 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 250 | 180 | 72 | 185 | 74 | 3 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 250 | 196 | 78 | 196 | 78 | 0 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 250 | 260 | 104 | 254 | 102 | 2 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 250 | 227 | 91 | 220 | 88 | 3 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 250 | 226 | 90 | 221 | 88 | 2 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 250 | 247 | 99 | 236 | 94 | 5 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 250 | 229 | 92 | 223 | 89 | 3 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 250 | 228 | 91 | 218 | 87 | 4 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 250 | 227 | 91 | 217 | 87 | 5 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 250 | 214 | 86 | 207 | 83 | 3 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 250 | 255 | 102 | 230 | 92 | 10 | 70-130/30 |
| | m,p-Xylene | ND | | 500 | 470 | 94 | 457 | 91 | 3 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 250 | 245 | 98 | 240 | 96 | 2 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 750 | 715 | 95 | 697 | 93 | 3 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16569-2MS | H59213.D | 5 | 12/13/12 | DFT | n/a | n/a | MSH1953 |
| MC16569-2MSD | H59214.D | 5 | 12/13/12 | DFT | n/a | n/a | MSH1953 |
| MC16569-2 | H59212.D | 1 | 12/13/12 | DFT | n/a | n/a | MSH1953 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16445-6

| CAS No. | Surrogate Recoveries | MS | MSD | MC16569-2 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 105% | 105% | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 100% | 100% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 105% | 104% | 104% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

6.4.3

# Volatile Internal Standard Area Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSH1953-CC1910 | Injection Date: | 12/13/12 |
| Lab File ID: | H59203.D | Injection Time: | 11:52 |
| Instrument ID: | GCMSH | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 224682 | 8.70 | 332183 | 9.57 | 150248 | 12.83 | 172667 | 15.40 | 45837 | 6.28 |
| Upper Limit [a] | 449364 | 9.20 | 664366 | 10.07 | 300496 | 13.33 | 345334 | 15.90 | 91674 | 6.78 |
| Lower Limit [b] | 112341 | 8.20 | 166092 | 9.07 | 75124 | 12.33 | 86334 | 14.90 | 22919 | 5.78 |

| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| MSH1953-BS | 222524 | 8.70 | 327495 | 9.57 | 151033 | 12.83 | 170912 | 15.40 | 47356 | 6.27 |
| MSH1953-MB | 207079 | 8.71 | 298050 | 9.57 | 129633 | 12.83 | 148786 | 15.40 | 45719 | 6.29 |
| ZZZZZZ | 194018 | 8.71 | 279846 | 9.57 | 119400 | 12.83 | 136486 | 15.40 | 36918 | 6.28 |
| ZZZZZZ | 203303 | 8.70 | 285246 | 9.57 | 126532 | 12.83 | 142714 | 15.40 | 40816 | 6.28 |
| ZZZZZZ | 196015 | 8.71 | 278630 | 9.57 | 120529 | 12.83 | 139831 | 15.40 | 38593 | 6.28 |
| ZZZZZZ | 229931 | 8.70 | 328951 | 9.57 | 148901 | 12.83 | 188496 | 15.40 | 76048 | 6.28 |
| MC16569-2 | 228680 | 8.70 | 332076 | 9.57 | 145327 | 12.83 | 166675 | 15.40 | 49182 | 6.28 |
| MC16569-2MS | 248836 | 8.70 | 368613 | 9.57 | 166743 | 12.83 | 186150 | 15.40 | 52559 | 6.28 |
| MC16569-2MSD | 247308 | 8.70 | 362659 | 9.57 | 162987 | 12.83 | 188783 | 15.40 | 51131 | 6.27 |
| ZZZZZZ | 223993 | 8.70 | 318160 | 9.57 | 137701 | 12.83 | 155844 | 15.40 | 48952 | 6.28 |
| ZZZZZZ | 212287 | 8.71 | 296514 | 9.57 | 128966 | 12.83 | 146781 | 15.40 | 43890 | 6.28 |
| ZZZZZZ | 208428 | 8.71 | 298995 | 9.57 | 129271 | 12.83 | 144661 | 15.40 | 42588 | 6.28 |
| MC16445-6 | 208113 | 8.70 | 290423 | 9.57 | 126590 | 12.83 | 146448 | 15.40 | 42428 | 6.28 |
| ZZZZZZ | 203453 | 8.71 | 286230 | 9.57 | 122893 | 12.83 | 138541 | 15.40 | 41791 | 6.28 |
| ZZZZZZ | 194450 | 8.70 | 273711 | 9.57 | 120449 | 12.83 | 133966 | 15.40 | 39516 | 6.28 |
| ZZZZZZ | 220137 | 8.71 | 308469 | 9.57 | 140224 | 12.83 | 162501 | 15.40 | 47238 | 6.27 |
| ZZZZZZ | 228068 | 8.70 | 331661 | 9.57 | 141919 | 12.83 | 156927 | 15.40 | 41594 | 6.28 |
| ZZZZZZ | 208725 | 8.70 | 291735 | 9.57 | 126591 | 12.83 | 145235 | 15.40 | 42151 | 6.28 |
| ZZZZZZ | 208661 | 8.70 | 295957 | 9.57 | 132345 | 12.83 | 168300 | 15.40 | 50912 | 6.28 |
| ZZZZZZ | 207090 | 8.71 | 295799 | 9.57 | 127835 | 12.83 | 144525 | 15.40 | 50773 | 6.27 |
| ZZZZZZ | 210203 | 8.70 | 299923 | 9.57 | 131570 | 12.83 | 171763 | 15.40 | 44164 | 6.27 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.1

# Volatile Internal Standard Area Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSK2153-CC2132 | Injection Date: | 12/05/12 |
| Lab File ID: | K65363A.D | Injection Time: | 08:40 |
| Instrument ID: | GCMSK | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 123640 | 8.82 | 200301 | 9.67 | 98664 | 12.93 | 98233 | 15.49 | 34525 | 6.42 |
| Upper Limit [a] | 247280 | 9.32 | 400602 | 10.17 | 197328 | 13.43 | 196466 | 15.99 | 69050 | 6.92 |
| Lower Limit [b] | 61820 | 8.32 | 100151 | 9.17 | 49332 | 12.43 | 49117 | 14.99 | 17263 | 5.92 |

| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| MSK2154-BS | 120087 | 8.82 | 191498 | 9.67 | 94663 | 12.93 | 95702 | 15.49 | 29153 | 6.42 |
| MSK2153-BS | 120087 | 8.82 | 191498 | 9.67 | 94663 | 12.93 | 95702 | 15.49 | 29153 | 6.42 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1788-CC1784 | Injection Date: | 12/06/12 |
| Lab File ID: | M52735.D | Injection Time: | 10:54 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 232644 | 9.36 | 346270 | 10.24 | 188801 | 13.52 | 186280 | 16.08 | 58853 | 6.86 |
| Upper Limit [a] | 465288 | 9.86 | 692540 | 10.74 | 377602 | 14.02 | 372560 | 16.58 | 117706 | 7.36 |
| Lower Limit [b] | 116322 | 8.86 | 173135 | 9.74 | 94401 | 13.02 | 93140 | 15.58 | 29427 | 6.36 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1788-BS | 208568 | 9.36 | 312001 | 10.24 | 172544 | 13.52 | 173377 | 16.08 | 118203[c] | 6.86 |
| MSM1788-BSD | 213285 | 9.36 | 320005 | 10.24 | 176131 | 13.52 | 178931 | 16.08 | 125465[c] | 6.86 |
| MSM1788-MB | 226358 | 9.36 | 329355 | 10.24 | 177171 | 13.52 | 182523 | 16.08 | 55837 | 6.87 |
| ZZZZZZ | 229297 | 9.36 | 339019 | 10.24 | 185345 | 13.52 | 197952 | 16.08 | 100176 | 6.86 |
| ZZZZZZ | 187982 | 9.36 | 272284 | 10.24 | 114529 | 13.52 | 69938[d] | 16.09 | 105737 | 6.86 |
| ZZZZZZ | 168855 | 9.36 | 249701 | 10.24 | 121138 | 13.52 | 90978[d] | 16.09 | 96384 | 6.85 |
| ZZZZZZ | 177656 | 9.36 | 262339 | 10.24 | 135890 | 13.52 | 127244 | 16.08 | 84550 | 6.86 |
| ZZZZZZ | 224290 | 9.36 | 329971 | 10.24 | 177919 | 13.52 | 182579 | 16.09 | 107587 | 6.86 |
| ZZZZZZ | 229625 | 9.36 | 340025 | 10.24 | 182525 | 13.52 | 193284 | 16.08 | 105660 | 6.86 |
| ZZZZZZ | 196568 | 9.36 | 290697 | 10.24 | 138333 | 13.52 | 95143 | 16.08 | 95402 | 6.86 |
| MC16395-2 | 213800 | 9.36 | 312309 | 10.24 | 167075 | 13.52 | 177124 | 16.08 | 90790 | 6.86 |
| MC16395-2MS | 215391 | 9.36 | 324318 | 10.24 | 176667 | 13.52 | 180338 | 16.08 | 101447 | 6.86 |
| MC16395-2MSD | 215680 | 9.36 | 323604 | 10.24 | 179626 | 13.52 | 183464 | 16.08 | 98188 | 6.86 |
| ZZZZZZ | 195673 | 9.36 | 289996 | 10.24 | 149401 | 13.52 | 131442 | 16.08 | 89823 | 6.86 |
| ZZZZZZ | 190536 | 9.36 | 280968 | 10.24 | 140161 | 13.52 | 123176 | 16.09 | 83472 | 6.85 |
| ZZZZZZ | 190351 | 9.36 | 278721 | 10.24 | 144447 | 13.52 | 139646 | 16.09 | 95550 | 6.85 |
| ZZZZZZ | 212833 | 9.36 | 317165 | 10.24 | 152875 | 13.52 | 157036 | 16.08 | 104841 | 6.86 |
| MC16445-1 | 199519 | 9.36 | 292725 | 10.24 | 157330 | 13.52 | 159431 | 16.08 | 79279 | 6.86 |
| MC16445-2 | 198683 | 9.36 | 292834 | 10.24 | 158026 | 13.52 | 163901 | 16.08 | 85293 | 6.86 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits. Target analytes not associated with this internal standard.
(d) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

6.5.3

# Volatile Surrogate Recovery Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC16445-6 | H59219.D | 100.0 | 101.0 | 104.0 |
| MC16569-2MS | H59213.D | 105.0 | 98.0 | 105.0 |
| MC16569-2MSD | H59214.D | 105.0 | 100.0 | 104.0 |
| MSH1953-BS | H59204.D | 109.0 | 100.0 | 104.0 |
| MSH1953-MB | H59206.D | 103.0 | 101.0 | 104.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

6.6.1

# Volatile Surrogate Recovery Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC16445-1 | M52756.D | 98.0 | 117.0 | 98.0 |
| MC16445-2 | M52757.D | 96.0 | 116.0 | 95.0 |
| MC16445-3 | K65375.D | 100.0 | 103.0 | 112.0 |
| MC16445-4 | K65376.D | 99.0 | 101.0 | 108.0 |
| MC16445-5 | K65377.D | 101.0 | 105.0 | 120.0 |
| JB20375-3MS | K65378.D | 95.0 | 100.0 | 104.0 |
| JB20375-3MSD | K65379.D | 97.0 | 101.0 | 105.0 |
| MC16395-2MS | M52748.D | 99.0 | 112.0 | 96.0 |
| MC16395-2MSD | M52749.D | 99.0 | 114.0 | 96.0 |
| MSK2153-BS | K65364.D | 98.0 | 101.0 | 112.0 |
| MSK2153-BSD | K65365.D | 98.0 | 100.0 | 104.0 |
| MSK2153-MB | K65367.D | 97.0 | 96.0 | 101.0 |
| MSM1788-BS | M52736.D | 101.0 | 113.0 | 97.0 |
| MSM1788-BSD | M52737.D | 101.0 | 115.0 | 96.0 |
| MSM1788-MB | M52739.D | 97.0 | 113.0 | 94.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

New England ACCUTEST LABORATORIES

## GC Volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31352-MB | BK19728.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16445-1, MC16445-2, MC16445-3, MC16445-4, MC16445-5



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 2.5 | 1.1 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.5 | 0.96 | ug/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 108% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 98% | 61-167% |

# Method Blank Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31406-MB | BK19937.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16445-6



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.015 | 0.013 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.015 | 0.010 | ug/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 100% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 95% | 36-173% |

# Blank Spike Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31352-BS | BK19729.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16445-1, MC16445-2, MC16445-3, MC16445-4, MC16445-5



| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 65 | 66.5 | 102 | 59-142 |
| 106-93-4 | 1,2-Dibromoethane | 65 | 60.3 | 93 | 56-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 107% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 97% | 61-167% |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31406-BS | BK19938.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16445-6

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 0.071 | 0.067 | 94 | 60-140 |
| 106-93-4 | 1,2-Dibromoethane | 0.071 | 0.071 | 100 | 60-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 104% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 96% | 36-173% |

* = Outside of Control Limits.

7.2.2

7

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31352-MS | BK19730.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |
| OP31352-MSD | BK19731.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |
| MC16336-6 | BK19735.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16445-1, MC16445-2, MC16445-3, MC16445-4, MC16445-5



| CAS No. | Compound | MC16336-6 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 367 | 337 | 92 | 382 | 91 | 13 | 40-156/27 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 367 | 304 | 83 | 342 | 82 | 12 | 48-141/27 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC16336-6 | Limits |
|---|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 99% | 91% | 96% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 91% | 85% | 94% | 61-167% |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31406-MS | BK19941.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |
| OP31406-MSD | BK19942.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |
| MC16600-6 | BK19943.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16445-6

| CAS No. | Compound | MC16600-6 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 0.071 | 0.066 | 93 | 0.064 | 90 | 3 | 64-141/29 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 0.071 | 0.072 | 101 | 0.067 | 94 | 7 | 63-163/27 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC16600-6 | Limits |
|---|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 110% | 108% | 107% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 100% | 100% | 99% | 36-173% |

* = Outside of Control Limits.

# Volatile Surrogate Recovery Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Method: SW846 8011 | Matrix: AQ |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] | S1 [b] |
|---|---|---|---|
| MC16445-6 | BK19940.D | 117.0 | 106.0 |
| OP31406-BS | BK19938.D | 104.0 | 96.0 |
| OP31406-MB | BK19937.D | 100.0 | 95.0 |
| OP31406-MS | BK19941.D | 110.0 | 100.0 |
| OP31406-MSD | BK19942.D | 108.0 | 100.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Bromofluorobenzene (S) | 36-173% |

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1

# Volatile Surrogate Recovery Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Method: SW846 8011 | Matrix: SO |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] | S1 [b] |
|---|---|---|---|
| MC16445-1 | BK19739.D | 94.0 | 92.0 |
| MC16445-2 | BK19740.D | 96.0 | 93.0 |
| MC16445-3 | BK19741.D | 72.0 | 83.0 |
| MC16445-4 | BK19742.D | 72.0 | 82.0 |
| MC16445-5 | BK19743.D | 79.0 | 83.0 |
| OP31352-BS | BK19729.D | 107.0 | 97.0 |
| OP31352-MB | BK19728.D | 108.0 | 98.0 |
| OP31352-MS | BK19730.D | 99.0 | 91.0 |
| OP31352-MSD | BK19731.D | 91.0 | 85.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Bromofluorobenzene (S) | 61-167% |

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBK712-ICC712 | Injection Date: | 12/09/12 |
| Lab File ID: | BK19722.D | Injection Time: | 17:47 |
| Instrument ID: | GCBK | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.56 | 4.90 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| OP31352-MB | BK19728.D | 12/09/12 | 20:14 | 4.57 | 4.90 |
| OP31352-BS | BK19729.D | 12/09/12 | 20:38 | 4.56 | 4.90 |
| OP31352-MS | BK19730.D | 12/09/12 | 21:03 | 4.57 | 4.90 |
| OP31352-MSD | BK19731.D | 12/09/12 | 21:27 | 4.57 | 4.90 |
| ZZZZZZ | BK19732.D | 12/09/12 | 21:52 | 4.56 | 4.90 |
| ZZZZZZ | BK19733.D | 12/09/12 | 22:16 | 4.56 | 4.90 |
| ZZZZZZ | BK19734.D | 12/09/12 | 22:41 | 4.56 | 4.90 |
| MC16336-6 | BK19735.D | 12/09/12 | 23:05 | 4.57 | 4.90 |
| ZZZZZZ | BK19736.D | 12/09/12 | 23:30 | 4.56 | 4.90 |
| ZZZZZZ | BK19737.D | 12/09/12 | 23:55 | 4.56 | 4.90 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #2
(b) Retention time from GC signal #1

7.5.1

7

# GC Surrogate Retention Time Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBK712-CC712 | Injection Date: | 12/10/12 |
| Lab File ID: | BK19738.D | Injection Time: | 00:20 |
| Instrument ID: | GCBK | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.56 | 4.90 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| MC16445-1 | BK19739.D | 12/10/12 | 00:44 | 4.57 | 4.90 |
| MC16445-2 | BK19740.D | 12/10/12 | 01:09 | 4.57 | 4.90 |
| MC16445-3 | BK19741.D | 12/10/12 | 01:33 | 4.56 | 4.90 |
| MC16445-4 | BK19742.D | 12/10/12 | 01:58 | 4.56 | 4.90 |
| MC16445-5 | BK19743.D | 12/10/12 | 02:23 | 4.56 | 4.90 |
| ZZZZZZ | BK19744.D | 12/10/12 | 02:47 | 4.56 | 4.90 |
| ZZZZZZ | BK19745.D | 12/10/12 | 03:12 | 4.56 | 4.90 |
| ZZZZZZ | BK19746.D | 12/10/12 | 03:36 | 4.56 | 4.90 |
| ZZZZZZ | BK19747.D | 12/10/12 | 04:01 | 4.56 | 4.90 |
| ZZZZZZ | BK19748.D | 12/10/12 | 04:25 | 4.56 | 4.90 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #2
(b) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBK716-ICC716 | Injection Date: | 12/13/12 |
| Lab File ID: | BK19932.D | Injection Time: | 18:03 |
| Instrument ID: | GCBK | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.52 | 4.85 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| ZZZZZZ | BK19935A.D | 12/13/12 | 19:16 | 4.52 | 4.85 |
| ZZZZZZ | BK19935B.D | 12/13/12 | 19:16 | 4.52 | 4.85 |
| OP31405-MB | BK19937A.D | 12/13/12 | 20:04 | 4.52 | 4.85 |
| OP31406-MB | BK19937.D | 12/13/12 | 20:04 | 4.52 | 4.85 |
| OP31405-BS | BK19938A.D | 12/13/12 | 20:28 | 4.52 | 4.85 |
| OP31406-BS | BK19938.D | 12/13/12 | 20:28 | 4.52 | 4.85 |
| OP31405-BSD | BK19939.D | 12/13/12 | 20:52 | 4.52 | 4.85 |
| MC16445-6 | BK19940.D | 12/13/12 | 21:17 | 4.52 | 4.85 |
| OP31406-MS | BK19941.D | 12/13/12 | 21:41 | 4.52 | 4.85 |
| OP31406-MSD | BK19942.D | 12/13/12 | 22:06 | 4.52 | 4.85 |
| MC16600-6 | BK19943.D | 12/13/12 | 22:30 | 4.52 | 4.85 |
| ZZZZZZ | BK19944.D | 12/13/12 | 22:55 | 4.52 | 4.85 |
| ZZZZZZ | BK19945.D | 12/13/12 | 23:19 | 4.52 | 4.85 |
| ZZZZZZ | BK19946.D | 12/13/12 | 23:43 | 4.52 | 4.85 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC sigual #2
(b) Retention time from GC signal #1

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## General Chemistry

# QC Data Summaries

Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC16445
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| **Sample:** MC16445-1 | **Analyzed:** 04-DEC-12 hy MC | | **Method:** SM21 2540 B MOD. |
| **ClientID:** MW-22-12 | | | |
| Wet Weight (Total) | 33.233 | g | |
| Tare Weight | 21.223 | g | |
| Dry Weight (Total) | 30.633 | g | |
| Solids, Percent | 78.4 | % | |
| **Sample:** MC16445-2 | **Analyzed:** 04-DEC-12 by MC | | **Method:** SM21 2540 B MOD. |
| **ClientID:** MW-22-12-DUP | | | |
| Wet Weight (Total) | 30.968 | g | |
| Tare Weight | 18.653 | g | |
| Dry Weight (Total) | 28.092 | g | |
| Solids, Percent | 76.6 | % | |
| **Sample:** MC16445-3 | **Analyzed:** 04-DEC-12 by MC | | **Method:** SM21 2540 B MOD. |
| **ClientID:** MW-22-23 | | | |
| Wet Weight (Total) | 30.817 | g | |
| Tare Weight | 19.811 | g | |
| Dry Weight (Total) | 28.735 | g | |
| Solids, Percent | 81.1 | % | |
| **Sample:** MC16445-4 | **Analyzed:** 04-DEC-12 by MC | | **Method:** SM21 2540 B MOD. |
| **ClientID:** MW-22-23-DUP | | | |
| Wet Weight (Total) | 42.604 | g | |
| Tare Weight | 30.762 | g | |
| Dry Weight (Total) | 40.32 | g | |
| Solids, Percent | 80.7 | % | |
| **Sample:** MC16445-5 | **Analyzed:** 04-DEC-12 by MC | | **Method:** SM21 2540 B MOD. |
| **ClientID:** MW-22-39 | | | |
| Wet Weight (Total) | 34.937 | g | |
| Tare Weight | 21.078 | g | |
| Dry Weight (Total) | 31.829 | g | |
| Solids, Percent | 77.6 | % | |

8.1

# Roxana Drilling 2013 Data Review

**Laboratory SDG: MC16475**

**Data Reviewer: Elizabeth Kunkel**

**Peer Reviewer: Steve Gragert**

**Date Reviewed: 2/19/2013**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| MW-19-13 | MW-19-20 |
| MW-19-32 | Trip Blank |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS/LCSD recoveries were outside evaluation criteria. Initial calibration verification recovery for acetone, 2-hexanone, and vinyl acetate exceeded 50% difference (%D). These issues are addressed further in the appropriate sections below. Continuing calibration verification recoveries for acrolein and 2-chloroethyl vinyl ether exceeded 50% difference (%D). Calibration verification recoveries exceeding 50% D were associated with the trip blank; trip blanks are quality control samples and are not qualified.

No issues or discrepancies were noted in the cooler receipt form.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSG4880-BS | VOCs | Acrolein | **40** | NA | 70-130/NA |
| MSG4880-BS | VOCs | 4-Methyl-2-pentanone | **66** | NA | 70-130/NA |
| **LCS/** | **Parameter** | **Analyte** | **LCS/LCSD** | **RPD** | **LCS/LCSD/** |

| LCSD ID | | | Recovery | | RPD Criteria |
|---|---|---|---|---|---|
| MSH1955-BS/BSD | VOCs | Acrolein | **48**/**48** | 1 | 70-130/25 |
| MSH1955-BS/BSD | VOCs | 2-Chloroethyl vinyl ether | **56**/**59** | 6 | 70-130/25 |
| MSH1955-BS/BSD | VOCs | Dichlorodifluoromethane | **63**/**62** | 2 | 70-130/25 |
| MSH1955-BS/BSD | VOCs | 2,2-Dichloropropane | **136**/**131** | 4 | 70-130/25 |

Analytical data that required qualification based on LCS/LCSD data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| MW-19-13 | VOCs | Acrolein | **UJ** |
| MW-19-13 | VOCs | 4-Methyl-2-pentanone | **UJ** |
| MW-19-20 | VOCs | Acrolein | **J** |
| MW-19-20 | VOCs | 4-Methyl-2-pentanone | **UJ** |
| MW-19-32 | VOCs | Acrolein | **UJ** |
| MW-19-32 | VOCs | 4-Methyl-2-pentanone | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

No

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

No

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

The initial calibration verification (ICV) recovery for acetone, 2-hexanone, and vinyl acetate exceeded 50 percent difference (%D). Analytical data that required qualification based on ICV data are included in the table below.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| MW-19-13 | VOCs | Acetone | **UJ** |
| MW-19-13 | VOCs | 2-Hexanone | **UJ** |
| MW-19-13 | VOCs | Vinyl acetate | **UJ** |
| MW-19-20 | VOCs | Acetone | **UJ** |
| MW-19-20 | VOCs | 2-Hexanone | **UJ** |
| MW-19-20 | VOCs | Vinyl acetate | **UJ** |
| MW-19-32 | VOCs | Acetone | **UJ** |
| MW-19-32 | VOCs | 2-Hexanone | **UJ** |
| MW-19-32 | VOCs | Vinyl acetate | **UJ** |

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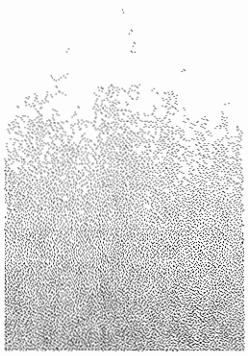
01/02/13





## Technical Report for

**Shell Oil**

URSMOSTL: Roxana Drilling, Roxana, IL

21562735.00015

Accutest Job Number: MC16475

Sampling Date: 12/03/12

Report to:

URS Corporation

elizabeth.kunkel@URS.com

ATTN: Elizabeth Kunkel

Total number of pages in report: 66

Reviewed
on
2/18/2013

Reza Pand
Lab Director

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) ISO 17025:2005 (L2235)

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# SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Shell Oil **Job No** MC16475

**Site:** URSMOSTL: Roxana Drilling, Roxana, IL **Report Date** 12/21/2012 11:03:02 AM

3 Sample(s), 1 Trip Blank(s) were collected on 12/03/2012 and were received at Accutest on 12/04/2012 properly preserved, at 2.2 Deg. C and intact. These Samples received an Accutest job number of MC16475. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. 1-Chlorohexane was were searched in the library search and reported only if detections were found.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSH1955

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16456-3MS, MC16456-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- BS/BSD Recovery(s) for 2,2-Dichloropropane, 2-Chloroethyl vinyl ether, Acrolein, Dichlorodifluoromethane are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,1,1-Trichloroethane, 2,2-Dichloropropane, 2-Chloroethyl vinyl ether, Acrolein, Carbon tetrachloride, Chloromethane, Dichlorodifluoromethane, Trichlorofluoromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2,2-Dichloropropane, 2-Chloroethyl vinyl ether, Acrolein, Carbon tetrachloride, Chloromethane, Dichlorodifluoromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

**Matrix** SO **Batch ID:** MSG4880

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16587-5MS, MC16587-5MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Initial calibration verification MSG4851-ICV4851 for vinyl acetate exceeds 50% Difference. The vinyl acetate is within criteria in continuing calibration check standard MSG4880-CC4851.
- Blank Spike Recovery(s) for 4-Methyl-2-pentanone (MIBK), Acrolein are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for 4-Methyl-2-pentanone (MIBK), Acrolein, Chloromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Continuing calibration check stanard MSG4880-CC4851 for acrolein, 2-chloroethyl vinyl ether exceed 50% Difference. Acrolein, 2-chloroethyl vinyl ether is considered a difficult method analyte.
- Initial calibration verification MSG4851-ICV4851 for acetone, 2-Hexanone exceeds 50% Difference (response bias high). Associated samples are non-detect for these compounds.

## Volatiles by GC By Method SW846 8011

| Matrix | AQ | Batch ID: | OP31406 |
|---|---|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16600-6MS, MC16600-6MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

| Matrix | SO | Batch ID: | OP31352 |
|---|---|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16336-6MS, MC16336-6MSD were nsed as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix | SO | Batch ID: | GN41201 |
|---|---|---|---|

- Sample(s) MC16587-1DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC16475).

# Summary of Hits



**Job Number:** MC16475
**Account:** Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL
**Collected:** 12/03/12

| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| **MC16475-1** | **MW-19-13** | | | | | |
| Benzene | | 73.3 | 1.3 | 0.76 | mg/kg | SW846 8260B |
| n-Butylbenzene | | 27.3 | 13 | 0.48 | mg/kg | SW846 8260B |
| sec-Butylbenzene | | 15.7 | 13 | 0.60 | mg/kg | SW846 8260B |
| Ethylbenzene | | 198 | 5.2 | 0.63 | mg/kg | SW846 8260B |
| Isopropylbenzene | | 31.6 | 13 | 0.59 | mg/kg | SW846 8260B |
| p-Isopropyltoluene | | 14.7 | 13 | 0.46 | mg/kg | SW846 8260B |
| Naphthalene | | 34.8 | 13 | 3.2 | mg/kg | SW846 8260B |
| n-Propylbenzene | | 58.2 | 13 | 2.6 | mg/kg | SW846 8260B |
| Toluene | | 656 | 13 | 2.2 | mg/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | | 219 | 13 | 0.58 | mg/kg | SW846 8260B |
| 1,3,5-Trimethylbenzene | | 60.4 | 13 | 0.55 | mg/kg | SW846 8260B |
| m,p-Xylene | | 441 | 5.2 | 2.0 | mg/kg | SW846 8260B |
| o-Xylene | | 172 | 5.2 | 0.62 | mg/kg | SW846 8260B |
| Xylene (total) | | 613 | 5.2 | 0.62 | mg/kg | SW846 8260B |
| 1,2-Dibromoethane | | 0.0537 | 0.0033 | 0.0013 | mg/kg | SW846 8011 |
| **MC16475-2** | **MW-19-20** | | | | | |
| Acrolein | | 1.94 J | 3.7 | 1.5 | mg/kg | SW846 8260B |
| Benzene | | 3.59 | 0.074 | 0.043 | mg/kg | SW846 8260B |
| n-Butylbenzene | | 0.459 J | 0.74 | 0.027 | mg/kg | SW846 8260B |
| sec-Butylbenzene | | 0.458 J | 0.74 | 0.034 | mg/kg | SW846 8260B |
| Ethylbenzene | | 3.50 | 0.29 | 0.036 | mg/kg | SW846 8260B |
| Isopropylbenzene | | 1.54 | 0.74 | 0.034 | mg/kg | SW846 8260B |
| p-Isopropyltoluene | | 0.441 J | 0.74 | 0.026 | mg/kg | SW846 8260B |
| Naphthalene | | 4.44 | 0.74 | 0.18 | mg/kg | SW846 8260B |
| n-Propylbenzene | | 1.67 | 0.74 | 0.15 | mg/kg | SW846 8260B |
| Toluene | | 0.501 J | 0.74 | 0.12 | mg/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | | 9.21 | 0.74 | 0.033 | mg/kg | SW846 8260B |
| 1,3,5-Trimethylbenzene | | 2.45 | 0.74 | 0.031 | mg/kg | SW846 8260B |
| m,p-Xylene | | 3.11 | 0.29 | 0.12 | mg/kg | SW846 8260B |
| o-Xylene | | 0.234 J | 0.29 | 0.035 | mg/kg | SW846 8260B |
| Xylene (total) | | 3.34 | 0.29 | 0.035 | mg/kg | SW846 8260B |
| **MC16475-3** | **MW-19-32** | | | | | |
| Benzene | | 0.562 | 0.067 | 0.039 | mg/kg | SW846 8260B |
| n-Butylbenzene | | 0.290 J | 0.67 | 0.025 | mg/kg | SW846 8260B |
| sec-Butylbenzene | | 0.116 J | 0.67 | 0.031 | mg/kg | SW846 8260B |
| Ethylbenzene | | 1.95 | 0.27 | 0.032 | mg/kg | SW846 8260B |
| Isopropylbenzene | | 0.239 J | 0.67 | 0.030 | mg/kg | SW846 8260B |
| p-Isopropyltoluene | | 0.0998 J | 0.67 | 0.024 | mg/kg | SW846 8260B |
| Naphthalene | | 0.694 | 0.67 | 0.17 | mg/kg | SW846 8260B |

# Summary of Hits



**Job Number:** MC16475
**Account:** Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL
**Collected:** 12/03/12

| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| n-Propylbenzene | | 0.600 J | 0.67 | 0.14 | mg/kg | SW846 8260B |
| Toluene | | 0.506 J | 0.67 | 0.11 | mg/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | | 2.21 | 0.67 | 0.030 | mg/kg | SW846 8260B |
| 1,3,5-Trimethylbenzene | | 0.644 J | 0.67 | 0.029 | mg/kg | SW846 8260B |
| m,p-Xylene | | 3.36 | 0.27 | 0.11 | mg/kg | SW846 8260B |
| o-Xylene | | 1.34 | 0.27 | 0.032 | mg/kg | SW846 8260B |
| Xylene (total) | | 4.70 | 0.27 | 0.032 | mg/kg | SW846 8260B |

**MC16475-4** **TRIP BLANK**

No hits reported in this sample.

New England ACCUTEST LABORATORIES

4

## Sample Results

## Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-19-13 | | |
| **Lab Sample ID:** | MC16475-1 | **Date Sampled:** | 12/03/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/04/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | 75.1 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | G122784.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.88 g | 10.0 ml | 5.0 ul |
| Run #2 | | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 13 | 3.3 | mg/kg | J |
| 107-02-8 | Acrolein | ND | 65 | 26 | mg/kg | J |
| 107-13-1 | Acrylonitrile | ND | 65 | 3.2 | mg/kg | |
| 71-43-2 | Benzene | 73.3 | 1.3 | 0.76 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 13 | 0.58 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 13 | 0.97 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 5.2 | 0.55 | mg/kg | |
| 75-25-2 | Bromoform | ND | 5.2 | 5.2 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 5.2 | 1.3 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 13 | 3.2 | mg/kg | |
| 104-51-8 | n-Butylbenzene | 27.3 | 13 | 0.48 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | 15.7 | 13 | 0.60 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 13 | 2.3 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 13 | 0.43 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 5.2 | 1.9 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 5.2 | 0.71 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 13 | 3.3 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 13 | 5.2 | mg/kg | |
| 67-66-3 | Chloroform | ND | 5.2 | 1.3 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 13 | 1.2 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 13 | 2.9 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 13 | 0.59 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 5.2 | 0.77 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 5.2 | 0.56 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 5.2 | 0.59 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 5.2 | 0.55 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 5.2 | 3.0 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 5.2 | 0.70 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 5.2 | 0.75 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 5.2 | 0.95 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 5.2 | 0.78 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 5.2 | 0.74 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-19-13 | | |
| **Lab Sample ID:** | MC16475-1 | **Date Sampled:** | 12/03/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/04/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | 75.1 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

4.1

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**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 5.2 | 0.97 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 13 | 0.60 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 13 | 2.3 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 13 | 0.68 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 5.2 | 0.44 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 5.2 | 1.3 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 65 | 65 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 13 | 1.8 | mg/kg | |
| 100-41-4 | Ethylbenzene | 198 | 5.2 | 0.63 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 13 | 1.2 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 13 | 1.3 | mg/kg | UJ |
| 98-82-8 | Isopropylbenzene | 31.6 | 13 | 0.59 | mg/kg | |
| 99-87-6 | p-Isopropyltolnene | 14.7 | 13 | 0.46 | mg/kg | |
| 1634-04-4 | Methyl Tert Bntyl Ether | ND | 5.2 | 0.75 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 13 | 1.3 | mg/kg | UJ |
| 74-95-3 | Methylene bromide | ND | 13 | 1.3 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 5.2 | 3.0 | mg/kg | |
| 91-20-3 | Naphthalene | 34.8 | 13 | 3.2 | mg/kg | |
| 103-65-1 | n-Propylbenzene | 58.2 | 13 | 2.6 | mg/kg | |
| 100-42-5 | Styrene | ND | 13 | 0.61 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 13 | 2.6 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 5.2 | 1.1 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 5.2 | 0.59 | mg/kg | |
| 108-88-3 | Toluene | 656 | 13 | 2.2 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 13 | 0.62 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 13 | 0.60 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 5.2 | 0.82 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 5.2 | 1.9 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 5.2 | 0.55 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 5.2 | 0.79 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 13 | 0.76 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 219 | 13 | 0.58 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzeue | 60.4 | 13 | 0.55 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 13 | 1.5 | mg/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 5.2 | 0.71 | mg/kg | |
| | m,p-Xylene | 441 | 5.2 | 2.0 | mg/kg | |
| 95-47-6 | o-Xylene | 172 | 5.2 | 0.62 | mg/kg | |
| 1330-20-7 | Xylene (total) | 613 | 5.2 | 0.62 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte fonnd in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-19-13 | | |
| **Lab Sample ID:** | MC16475-1 | **Date Sampled:** | 12/03/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/04/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | 75.1 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

**VOA Special List**

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 91% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 103% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-19-13 | | |
| **Lab Sample ID:** | MC16475-1 | **Date Sampled:** | 12/03/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/04/12 |
| **Method:** | SW846 8011 SW846 3550B | **Percent Solids:** | 75.1 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19744.D | 1 | 12/10/12 | AP | 12/10/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.3 g | 50.0 ml |
| Run #2 | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0033 | 0.0015 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | 0.0537 | 0.0033 | 0.0013 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 74% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 69% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-19-20 | | |
| **Lab Sample ID:** | MC16475-2 | **Date Sampled:** | 12/03/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/04/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | 72.1 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | G122782.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.43 g | 10.0 ml | 100 ul |
| Run #2 | | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.74 | 0.19 | mg/kg | U J |
| 107-02-8 | Acrolein | 1.94 | 3.7 | 1.5 | mg/kg | J J |
| 107-13-1 | Acrylonitrile | ND | 3.7 | 0.18 | mg/kg | |
| 71-43-2 | Benzene | 3.59 | 0.074 | 0.043 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.74 | 0.033 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.74 | 0.055 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.29 | 0.031 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.29 | 0.29 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.29 | 0.076 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.74 | 0.18 | mg/kg | |
| 104-51-8 | n-Butylbenzene | 0.459 | 0.74 | 0.027 | mg/kg | J |
| 135-98-8 | sec-Butylbenzene | 0.458 | 0.74 | 0.034 | mg/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 0.74 | 0.13 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.74 | 0.024 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.29 | 0.11 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.29 | 0.040 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.74 | 0.18 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.74 | 0.29 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.29 | 0.076 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.74 | 0.068 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.74 | 0.16 | mg/kg | |
| 106-43-4 | p-Chlorotolnene | ND | 0.74 | 0.033 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.29 | 0.043 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.29 | 0.032 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.29 | 0.033 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.29 | 0.031 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.29 | 0.17 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.29 | 0.040 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.29 | 0.042 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.29 | 0.054 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.29 | 0.044 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.29 | 0.042 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-19-20 | | |
| **Lab Sample ID:** | MC16475-2 | **Date Sampled:** | 12/03/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/04/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | 72.1 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |



**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.29 | 0.055 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.74 | 0.034 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.74 | 0.13 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.74 | 0.039 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.29 | 0.025 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.29 | 0.073 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 3.7 | 3.7 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.74 | 0.10 | mg/kg | |
| 100-41-4 | Ethylbenzene | 3.50 | 0.29 | 0.036 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.74 | 0.068 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.74 | 0.074 | mg/kg | UJ |
| 98-82-8 | Isopropylbenzene | 1.54 | 0.74 | 0.034 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | 0.441 | 0.74 | 0.026 | mg/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.29 | 0.042 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.74 | 0.074 | mg/kg | UJ |
| 74-95-3 | Methylene bromide | ND | 0.74 | 0.073 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.29 | 0.17 | mg/kg | |
| 91-20-3 | Naphthalene | 4.44 | 0.74 | 0.18 | mg/kg | |
| 103-65-1 | n-Propylbenzene | 1.67 | 0.74 | 0.15 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.74 | 0.034 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.74 | 0.15 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.29 | 0.063 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.29 | 0.034 | mg/kg | |
| 108-88-3 | Tolnene | 0.501 | 0.74 | 0.12 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.74 | 0.035 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.74 | 0.034 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.29 | 0.046 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.29 | 0.11 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.29 | 0.031 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.29 | 0.045 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.74 | 0.043 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 9.21 | 0.74 | 0.033 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2.45 | 0.74 | 0.031 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.74 | 0.082 | mg/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 0.29 | 0.040 | mg/kg | |
| | m,p-Xylene | 3.11 | 0.29 | 0.12 | mg/kg | |
| 95-47-6 | o-Xylene | 0.234 | 0.29 | 0.035 | mg/kg | J |
| 1330-20-7 | Xylene (total) | 3.34 | 0.29 | 0.035 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-19-20 | | |
| **Lab Sample ID:** | MC16475-2 | **Date Sampled:** | 12/03/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/04/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | 72.1 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

**VOA Special List**

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 105% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-19-20 | | |
| **Lab Sample ID:** | MC16475-2 | **Date Sampled:** | 12/03/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/04/12 |
| **Method:** | SW846 8011 SW846 3550B | **Percent Solids:** | 72.1 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19745.D | 1 | 12/10/12 | AP | 12/10/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.1 g | 50.0 ml |
| Run #2 | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0035 | 0.0015 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0035 | 0.0013 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 71% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 75% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-19-32 | | |
| **Lab Sample ID:** | MC16475-3 | **Date Sampled:** | 12/03/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/04/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | 74.3 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | G122783.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.79 g | 10.0 ml | 100 ul |
| Run #2 | | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.67 | 0.17 | mg/kg | ب ب |
| 107-02-8 | Acroleiu | ND | 3.3 | 1.3 | mg/kg | ب ب |
| 107-13-1 | Acrylonitrile | ND | 3.3 | 0.17 | mg/kg | |
| 71-43-2 | Benzene | 0.562 | 0.067 | 0.039 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.67 | 0.030 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.67 | 0.050 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.27 | 0.028 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.27 | 0.27 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.27 | 0.069 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.67 | 0.17 | mg/kg | |
| 104-51-8 | n-Butylbenzene | 0.290 | 0.67 | 0.025 | mg/kg | J |
| 135-98-8 | sec-Butylbenzene | 0.116 | 0.67 | 0.031 | mg/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 0.67 | 0.12 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.67 | 0.022 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.27 | 0.097 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.27 | 0.037 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.67 | 0.17 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.67 | 0.27 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.27 | 0.069 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.67 | 0.062 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.67 | 0.15 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.67 | 0.030 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.27 | 0.039 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.27 | 0.029 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.27 | 0.030 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.27 | 0.028 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.27 | 0.15 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.27 | 0.036 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.27 | 0.038 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.27 | 0.049 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.27 | 0.040 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.27 | 0.038 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-19-32 | | |
| **Lab Sample ID:** | MC16475-3 | **Date Sampled:** | 12/03/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/04/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | 74.3 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |



**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.27 | 0.050 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.67 | 0.031 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.67 | 0.12 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.67 | 0.035 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.27 | 0.023 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.27 | 0.066 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 3.3 | 3.3 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.67 | 0.091 | mg/kg | |
| 100-41-4 | Ethylbenzene | 1.95 | 0.27 | 0.032 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.67 | 0.062 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.67 | 0.067 | mg/kg | UJ |
| 98-82-8 | Isopropylbenzene | 0.239 | 0.67 | 0.030 | mg/kg | J |
| 99-87-6 | p-Isopropyltoluene | 0.0998 | 0.67 | 0.024 | mg/kg | J |
| 1634-04-4 | Methyl Tert Bntyl Ether | ND | 0.27 | 0.038 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.67 | 0.067 | mg/kg | UJ |
| 74-95-3 | Methylene bromide | ND | 0.67 | 0.066 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.27 | 0.15 | mg/kg | |
| 91-20-3 | Naphthalene | 0.694 | 0.67 | 0.17 | mg/kg | |
| 103-65-1 | n-Propylbenzene | 0.600 | 0.67 | 0.14 | mg/kg | J |
| 100-42-5 | Styrene | ND | 0.67 | 0.031 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.67 | 0.13 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.27 | 0.057 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.27 | 0.031 | mg/kg | |
| 108-88-3 | Toluene | 0.506 | 0.67 | 0.11 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.67 | 0.032 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.67 | 0.031 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.27 | 0.042 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.27 | 0.098 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.27 | 0.028 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.27 | 0.041 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.67 | 0.039 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylhenzene | 2.21 | 0.67 | 0.030 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 0.644 | 0.67 | 0.029 | mg/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 0.67 | 0.075 | mg/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 0.27 | 0.036 | mg/kg | |
| | m,p-Xylene | 3.36 | 0.27 | 0.11 | mg/kg | |
| 95-47-6 | o-Xylene | 1.34 | 0.27 | 0.032 | mg/kg | |
| 1330-20-7 | Xylene (total) | 4.70 | 0.27 | 0.032 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-19-32 | | |
| **Lab Sample ID:** | MC16475-3 | **Date Sampled:** | 12/03/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/04/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | 74.3 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

**VOA Special List**

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 94% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 94% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | MW-19-32 | | |
| **Lab Sample ID:** | MC16475-3 | **Date Sampled:** | 12/03/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/04/12 |
| **Method:** | SW846 8011 SW846 3550B | **Percent Solids:** | 74.3 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19746.D | 1 | 12/10/12 | AP | 12/10/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.6 g | 50.0 ml |
| Run #2 | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0033 | 0.0015 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0033 | 0.0013 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 79% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 75% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | TRIP BLANK | | |
| **Lab Sample ID:** | MC16475-4 | **Date Sampled:** | 12/03/12 |
| **Matrix:** | AQ - Trip Blank Water | **Date Received:** | 12/04/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | n/a |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | H59258.D | 1 | 12/14/12 | JP | n/a | n/a | MSH1955 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 3.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.2 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.24 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.62 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.3 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.58 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.78 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.4 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.61 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.55 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.64 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.61 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.87 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.47 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.50 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 1.3 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.50 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.73 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.65 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.48 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.53 | ug/l | |
| 95-50-1 | 1,2-Dichlorohenzene | ND | 1.0 | 0.93 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.45 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.64 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.7 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.62 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.41 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.95 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| **Client Sample ID:** | TRIP BLANK | | |
| **Lab Sample ID:** | MC16475-4 | **Date Sampled:** | 12/03/12 |
| **Matrix:** | AQ - Trip Blank Water | **Date Received:** | 12/04/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | n/a |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |



**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.72 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.64 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 1.6 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.91 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.45 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.20 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 15 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.81 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.51 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 2.1 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.50 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.57 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.41 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 2.9 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.1 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.83 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.58 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.45 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.57 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.60 | ng/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.42 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.51 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorohenzene | ND | 5.0 | 1.3 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.85 | ng/l | |
| 79-00-5 | 1,1,2-Trichloroethaue | ND | 1.0 | 0.50 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.78 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.29 | ng/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.85 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.35 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.47 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.3 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.63 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.73 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.58 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.58 | ng/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Iudicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | TRIP BLANK | | |
| **Lab Sample ID:** | MC16475-4 | **Date Sampled:** | 12/03/12 |
| **Matrix:** | AQ - Trip Blank Water | **Date Received:** | 12/04/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | n/a |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

**VOA Special List**

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 100% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 107% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | TRIP BLANK | | |
| **Lab Sample ID:** | MC16475-4 | **Date Sampled:** | 12/03/12 |
| **Matrix:** | AQ - Trip Blank Water | **Date Received:** | 12/04/12 |
| **Method:** | SW846 8011 SW846 8011 | **Percent Solids:** | n/a |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19944.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 35.8 ml | 2.0 ml |
| Run #2 | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.015 | 0.013 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.015 | 0.010 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 89% | | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 100% | | 36-173% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES



## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

ACCUTEST LABORATORIES

# CHAIN OF CUSTODY

Accutest Laboratories of New England
495 Technology Center West, Building One
TEL. 508-481-6200 FAX: 508-481-7753
www.accutest.com

PAGE 1 OF 1

FED EX Tracking #: | Bottle Order Control #:
Accutest Quote #: | Accutest Job #: MC16475

**Client / Reporting Information**

Company Name: URS
Street Address:
City: State: Zip:
Project Contact: E. Kunkel E-mail:
Phone #: Fax #:
Sampler(s) Name(s): W. Pennington, J. Staelter Phone #:

**Project Information**

Project Name: Roxana Drilling
Street:
City: Roxana, IL
Project#: 21562735.00015
Client PO#:
Project Manager: D. Palmer

**Billing Information (If different from Report to)**

Company Name: URS
Street Address:
City: State: Zip:
Attention: PO#:

**Requested Analysis (see TEST CODE sheet)**

| Accutest Sample # | Field ID / Point of Collection | MEOH Dr Vial # | Collection Date | Collection Time | Sampled by | Matrix | # of bottles | HCl | NaOH | HNO3 | H2SO4 | NONE | DI Water | MEOH | ENCORE | Bacillus | VOC 8260 | VOC 8011 | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | MW-19-13 | | 12/3/12 | 1320 | wmp | SO | 4 | | | | | X | | X | | X | X | X | |
| -2 | MW-19-20 | | ↓ | 1325 | ↓ | ↓ | ↓ | | | | | X | | X | | X | X | X | |
| -3 | MW-19-32 | | ↓ | 1336 | ↓ | ↓ | ↓ | | | | | X | | X | | X | X | X | |
| -4 | Trip Blank | | ↓ | | | | 4 | | | | | | | | | | X | X | |
| | | | | | | | | | | | | | | | | | | | 2F, 10H2 |
| | | | | | | | | | | | | | | | | | | | 2L1 |

**Matrix Codes**

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED - Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB - Equipment Blank
RB - Rinse Blank
TB - Trip Blank

**Turnaround Time (Business days)**

- [x] Std. 10 Business Days
- [ ] Std. 5 Business Days (By Contract only)
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Labtank

Approved By (Accutest PM) / Date:

**Data Deliverable Information**

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [x] FULLT1 (Level 3+4)
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [x] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

**Comments / Special Instructions**

Sample Custody must be documented below each time samples change possession, including courier delivery.

| Relinquished by Sampler: | Date Time: | Received By: | Relinquished By: | Date Time: | Received By: |
|---|---|---|---|---|---|
| 1 [signature] | 12/3/12 1600 | 1 Fed EX | 2 Fedex | 12-4-12 9:30 | 2 [signature] |
| 3 | | 3 | 4 | | 4 |
| 5 | | 5 | Custody Seal # ☐ Intact ☐ Not Intact | Preserved where applicable ☐ | On Ice ☑ Cooler Temp. 2.2°C |

5.1

5

MC16475: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES

# Accutest Laboratories Sample Receipt Summary

**Accutest Job Number:** MC16475 **Client:** URS **Immediate Client Services Action Required:** No

**Date / Time Received:** 12/4/2012 **Delivery Method:** **Client Service Action Required at Login:** No

**Project:** ROXANA DRILLING **No. Coolers:** 1 **Airbill #'s:**

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2. Custody Seals Intact | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification: | Infared gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservatio | Y or N | N/A |
|---|---|---|
| 1. Trip Blank present / cooler: | ☑ ☐ | ☐ |
| 2. Trip Blank listed on COC: | ☑ ☐ | ☐ |
| 3. Samples preserved properly: | ☑ ☐ | |
| 4. VOCs headspace free: | ☑ ☐ | ☐ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles. | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree. | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1. Sample recvd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3. Condition of sample: | Intact |

| Sample Integrity - Instructions | Y or N | N/A |
|---|---|---|
| 1. Analysis requested is clear. | ☑ ☐ | |
| 2. Bottles received for unspecified tests | ☐ ☑ | |
| 3. Sufficient volume recvd for analysis | ☑ ☐ | |
| 4. Compositing instructions clear: | ☐ ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ ☐ | ☑ |

Comments



**MC16475: Chain of Custody**
**Page 2 of 2**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC16475

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562735.00015



| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC16475-1 Collected: 03-DEC-12 13:20 By: WPJS Received: 04-DEC-12 By: MW-19-13 | | | | | | |
| MC16475-1 | SM21 2540 B MOD. | 07-DEC-12 | CF | | | %SOL |
| MC16475-1 | SW846 8011 | 10-DEC-12 02:47 | AP | 10-DEC-12 | NK | V8011SL |
| MC16475-1 | SW846 8260B | 11-DEC-12 18:14 | JM | | | V8260SL+ |
| MC16475-2 Collected: 03-DEC-12 13:25 By: WPJS Received: 04-DEC-12 By: MW-19-20 | | | | | | |
| MC16475-2 | SM21 2540 B MOD. | 07-DEC-12 | CF | | | %SOL |
| MC16475-2 | SW846 8011 | 10-DEC-12 03:12 | AP | 10-DEC-12 | NK | V8011SL |
| MC16475-2 | SW846 8260B | 11-DEC-12 17:16 | JM | | | V8260SL+ |
| MC16475-3 Collected: 03-DEC-12 13:35 By: WPJS Received: 04-DEC-12 By: MW-19-32 | | | | | | |
| MC16475-3 | SM21 2540 B MOD. | 07-DEC-12 | CF | | | %SOL |
| MC16475-3 | SW846 8011 | 10-DEC-12 03:36 | AP | 10-DEC-12 | NK | V8011SL |
| MC16475-3 | SW846 8260B | 11-DEC-12 17:46 | JM | | | V8260SL+ |
| MC16475-4 Collected: 03-DEC-12 00:00 By: WPJS Received: 04-DEC-12 By: TRIP BLANK | | | | | | |
| MC16475-4 | SW846 8011 | 13-DEC-12 22:55 | AP | 13-DEC-12 | BJ | V8011SL |
| MC16475-4 | SW846 8260B | 14-DEC-12 12:41 | JP | | | V8260SL+ |

# Accutest Internal Chain of Custody



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL
**Received:** 12/04/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16475-1.1 | Walk In Ref #5 | Crystall Woodruff | 12/07/12 16:36 | Retrieve from Storage |
| MC16475-1.1 | Crystall Woodruff | Walk In Ref #5 | 12/07/12 18:14 | Return to Storage |
| MC16475-1.1 | Walk In Ref #5 | Chris Cataldo | 12/08/12 10:32 | Retrieve from Storage |
| MC16475-1.1 | Chris Cataldo | Walk In Ref #5 | 12/08/12 21:08 | Return to Storage |
| MC16475-1.4 | VOC Ref #10 | Gary Krasinski | 12/05/12 15:08 | Retrieve from Storage |
| MC16475-1.4 | Gary Krasinski | VOC Ref #10 | 12/10/12 08:16 | Return to Storage |
| MC16475-1.4 | VOC Ref #10 | Jaime Maslowski | 12/11/12 12:04 | Retrieve from Storage |
| MC16475-1.4 | Jaime Maslowski | VOC Ref #10 | 12/12/12 10:08 | Return to Storage |
| MC16475-2.1 | Walk In Ref #5 | Crystall Woodruff | 12/07/12 16:36 | Retrieve from Storage |
| MC16475-2.1 | Crystall Woodruff | Walk In Ref #5 | 12/07/12 18:14 | Return to Storage |
| MC16475-2.1 | Walk In Ref #5 | Chris Cataldo | 12/08/12 10:32 | Retrieve from Storage |
| MC16475-2.1 | Chris Cataldo | Walk In Ref #5 | 12/08/12 21:08 | Return to Storage |
| MC16475-2.4 | VOC Ref #10 | Gary Krasinski | 12/05/12 15:08 | Retrieve from Storage |
| MC16475-2.4 | Gary Krasinski | VOC Ref #10 | 12/10/12 08:16 | Return to Storage |
| MC16475-2.4 | VOC Ref #10 | Jaime Maslowski | 12/11/12 12:04 | Retrieve from Storage |
| MC16475-2.4 | Jaime Maslowski | VOC Ref #10 | 12/12/12 10:08 | Return to Storage |
| MC16475-3.1 | Walk In Ref #5 | Crystall Woodruff | 12/07/12 16:36 | Retrieve from Storage |
| MC16475-3.1 | Crystall Woodruff | Walk In Ref #5 | 12/07/12 18:14 | Return to Storage |
| MC16475-3.1 | Walk In Ref #5 | Chris Cataldo | 12/08/12 10:32 | Retrieve from Storage |
| MC16475-3.1 | Chris Cataldo | Walk In Ref #5 | 12/08/12 21:08 | Return to Storage |
| MC16475-3.4 | VOC Ref #10 | Gary Krasinski | 12/05/12 15:08 | Retrieve from Storage |
| MC16475-3.4 | Gary Krasinski | VOC Ref #10 | 12/10/12 08:16 | Return to Storage |
| MC16475-3.4 | VOC Ref #10 | Jaime Maslowski | 12/11/12 12:04 | Retrieve from Storage |
| MC16475-3.4 | Jaime Maslowski | VOC Ref #10 | 12/12/12 10:08 | Return to Storage |
| MC16475-4.1 | VOC Ref #2 | Jugal Patel | 12/14/12 12:14 | Retrieve from Storage |
| MC16475-4.1 | Jugal Patel | GCMSH | 12/14/12 12:15 | Load on Instrument |
| MC16475-4.1 | GCMSH | Jugal Patel | 12/14/12 16:54 | Unload from Instrument |
| MC16475-4.1 | Jugal Patel | VOC Ref #2 | 12/14/12 16:58 | Return to Storage |
| MC16475-4.4 | VOC Ref #2 | Bijan Jafari | 12/13/12 04:39 | Retrieve from Storage |
| MC16475-4.4 | Bijan Jafari | | 12/14/12 17:43 | Depleted |

5.3

New England ACCUTEST LABORATORIES

## GC/MS Volatiles



## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4880-MB | G122775.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |

**The QC reported here applies to the following samples:** **Method:** SW846 8260B

MC16475-1, MC16475-2, MC16475-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 63 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 500 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 1300 | 63 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 11 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 19 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 11 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 100 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 26 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 63 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 9.2 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 11 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 44 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 8.2 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 36 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 14 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 63 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 100 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 26 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 23 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 55 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 11 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 15 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 57 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 14 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 14 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 18 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 15 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 19 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 12 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 43 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 13 | ug/kg | |

# Method Blank Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4880-MB | G122775.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |



**The QC reported here applies to the following samples:** **Method:** SW846 8260B

MC16475-1, MC16475-2, MC16475-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 8.5 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 25 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 34 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 12 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 23 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 25 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 11 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.9 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 14 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 25 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 25 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 58 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 63 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 51 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 12 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 21 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 11 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 42 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 12 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 11 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 16 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 37 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 11 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 15 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 15 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 11 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 11 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 28 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 14 | ug/kg | |
| | m,p-Xylene | ND | 100 | 39 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 12 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 12 | ug/kg | |

# Method Blank Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4880-MB | G122775.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |



**The QC reported here applies to the following samples:** **Method:** SW846 8260B

MC16475-1, MC16475-2, MC16475-3

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 111% | 70-130% |
| 2037-26-5 | Toluene-D8 | 103% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/kg | |

# Method Blank Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSH1955-MB | H59257.D | 1 | 12/14/12 | JP | n/a | n/a | MSH1955 |



**The QC reported here applies to the following samples:** **Method:** SW846 8260B

MC16475-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 3.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.2 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.24 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.62 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.3 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.58 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.78 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.4 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.61 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.55 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.64 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.61 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.87 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.47 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.50 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 1.3 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.50 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.73 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.65 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.48 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.53 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.93 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.45 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.64 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.7 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.62 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.41 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.95 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.72 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.64 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 1.6 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.91 | ug/l | |

# Method Blank Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSH1955-MB | H59257.D | 1 | 12/14/12 | JP | n/a | n/a | MSH1955 |



**The QC reported here applies to the following samples:** **Method:** SW846 8260B

MC16475-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.45 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.20 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 15 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.81 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.51 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 2.1 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.50 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.57 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.41 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 2.9 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.1 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.83 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.58 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.45 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.57 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.60 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.42 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.51 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.85 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.50 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.78 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.29 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.85 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 1.0 | 0.35 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 1.0 | 0.47 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.3 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.63 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.73 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.58 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.58 | ug/l | |

# Method Blank Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSH1955-MB | H59257.D | 1 | 12/14/12 | JP | n/a | n/a | MSH1955 |



**The QC reported here applies to the following samples:** **Method:** SW846 8260B

MC16475-4

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 106% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

# Blank Spike Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4880-BS | G122773.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |

**The QC reported here applies to the following samples:** **Method:** SW846 8260B

MC16475-1, MC16475-2, MC16475-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 2390 | 96 | 70-130 |
| 107-02-8 | Acrolein | 12500 | 5000 | 40* a | 70-130 |
| 107-13-1 | Acrylonitrile | 2500 | 2510 | 100 | 70-130 |
| 71-43-2 | Benzene | 2500 | 2620 | 105 | 70-130 |
| 108-86-1 | Bromobenzene | 2500 | 2350 | 94 | 70-130 |
| 74-97-5 | Bromochloromethane | 2500 | 2620 | 105 | 70-130 |
| 75-27-4 | Bromodichloromethane | 2500 | 2310 | 92 | 70-130 |
| 75-25-2 | Bromoform | 2500 | 1840 | 74 | 70-130 |
| 74-83-9 | Bromomethane | 2500 | 2590 | 104 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 2610 | 104 | 70-130 |
| 104-51-8 | n-Butylbenzene | 2500 | 2490 | 100 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2690 | 108 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2820 | 113 | 70-130 |
| 75-15-0 | Carbon disulfide | 2500 | 3120 | 125 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2240 | 90 | 70-130 |
| 108-90-7 | Chlorobenzene | 2500 | 2550 | 102 | 70-130 |
| 75-00-3 | Chloroethane | 2500 | 2830 | 113 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 890 | 36 | 10-160 |
| 67-66-3 | Chloroform | 2500 | 2700 | 108 | 70-130 |
| 74-87-3 | Chloromethane | 2500 | 3260 | 130 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2670 | 107 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2780 | 111 | 70-130 |
| 124-48-1 | Dibromochloromethane | 2500 | 2060 | 82 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2580 | 103 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2570 | 103 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2410 | 96 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 2050 | 82 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2990 | 120 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2290 | 92 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2820 | 113 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2840 | 114 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2740 | 110 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2590 | 104 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2320 | 93 | 70-130 |
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2940 | 118 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2570 | 103 | 70-130 |

* = Outside of Control Limits.

6.2.1

6

# Blank Spike Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4880-BS | G122773.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |



**The QC reported here applies to the following samples:** **Method:** SW846 8260B

MC16475-1, MC16475-2, MC16475-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2400 | 96 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2400 | 96 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 12500 | 11300 | 90 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2290 | 92 | 76-141 |
| 100-41-4 | Ethylbenzene | 2500 | 2430 | 97 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2320 | 93 | 70-130 |
| 591-78-6 | 2-Hexanone | 2500 | 2010 | 80 | 70-130 |
| 98-82-8 | Isopropylbenzene | 2500 | 2730 | 109 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2550 | 102 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2660 | 106 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 1640 | 66* [a] | 70-130 |
| 74-95-3 | Methylene bromide | 2500 | 2330 | 93 | 70-130 |
| 75-09-2 | Methylene chloride | 2500 | 2880 | 115 | 70-130 |
| 91-20-3 | Naphthalene | 2500 | 2870 | 115 | 70-130 |
| 103-65-1 | n-Propylbenzene | 2500 | 2730 | 109 | 70-130 |
| 100-42-5 | Styrene | 2500 | 2280 | 91 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2140 | 86 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2530 | 101 | 70-130 |
| 127-18-4 | Tetrachloroethene | 2500 | 2250 | 90 | 70-130 |
| 108-88-3 | Toluene | 2500 | 2560 | 102 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 2960 | 118 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2530 | 101 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2740 | 110 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2360 | 94 | 70-130 |
| 79-01-6 | Trichloroethene | 2500 | 2450 | 98 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2670 | 107 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2480 | 99 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2430 | 97 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2420 | 97 | 70-130 |
| 108-05-4 | Vinyl Acetate | 2500 | 2790 | 112 | 70-130 |
| 75-01-4 | Vinyl chloride | 2500 | 2850 | 114 | 70-130 |
| | m,p-Xylene | 5000 | 4980 | 100 | 70-130 |
| 95-47-6 | o-Xylene | 2500 | 2540 | 102 | 70-130 |
| 1330-20-7 | Xylene (total) | 7500 | 7530 | 100 | 70-130 |

* = Outside of Control Limits.

# Blank Spike Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4880-BS | G122773.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |

**The QC reported here applies to the following samples:** **Method:** SW846 8260B

MC16475-1, MC16475-2, MC16475-3

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 109% | 70-130% |
| 2037-26-5 | Toluene-D8 | 100% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16475
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSH1955-BS | H59255.D | 1 | 12/14/12 | JP | n/a | n/a | MSH1955 |
| MSH1955-BSD | H59256.D | 1 | 12/14/12 | JP | n/a | n/a | MSH1955 |



**The QC reported here applies to the following samples:** **Method:** SW846 8260B

MC16475-4

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 61.9 | 124 | 58.0 | 116 | 7 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 121 | 48* a | 120 | 48* a | 1 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 40.8 | 82 | 41.4 | 83 | 1 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 46.7 | 93 | 46.4 | 93 | 1 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 50.0 | 100 | 50.3 | 101 | 1 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 49.4 | 99 | 49.3 | 99 | 0 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 55.9 | 112 | 55.5 | 111 | 1 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 55.1 | 110 | 55.6 | 111 | 1 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 45.8 | 92 | 44.4 | 89 | 3 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 51.0 | 102 | 50.5 | 101 | 1 | 70-130/25 |
| 104-51-8 | n-Bntylbenzene | 50 | 52.3 | 105 | 52.1 | 104 | 0 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 54.3 | 109 | 54.4 | 109 | 0 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 55.2 | 110 | 55.8 | 112 | 1 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 49.6 | 99 | 47.7 | 95 | 4 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 64.4 | 129 | 63.4 | 127 | 2 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 49.5 | 99 | 49.9 | 100 | 1 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 45.8 | 92 | 44.4 | 89 | 3 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 27.9 | 56* a | 29.5 | 59* a | 6 | 70-130/25 |
| 67-66-3 | Chloroform | 50 | 54.0 | 108 | 53.0 | 106 | 2 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 46.2 | 92 | 45.2 | 90 | 2 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 53.6 | 107 | 53.8 | 108 | 0 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 55.5 | 111 | 55.5 | 111 | 0 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 49.6 | 99 | 50.4 | 101 | 2 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 51.9 | 104 | 52.6 | 105 | 1 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 53.6 | 107 | 53.4 | 107 | 0 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 48.9 | 98 | 48.8 | 98 | 0 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 31.7 | 63* a | 31.0 | 62* a | 2 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 51.6 | 103 | 51.0 | 102 | 1 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 54.5 | 109 | 53.3 | 107 | 2 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 51.6 | 103 | 50.5 | 101 | 2 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 48.5 | 97 | 47.5 | 95 | 2 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 48.8 | 98 | 47.6 | 95 | 2 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 46.5 | 93 | 46.1 | 92 | 1 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 45.2 | 90 | 46.9 | 94 | 4 | 70-130/25 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 68.1 | 136* a | 65.7 | 131* a | 4 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 52.3 | 105 | 51.1 | 102 | 2 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16475
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSH1955-BS | H59255.D | 1 | 12/14/12 | JP | n/a | n/a | MSH1955 |
| MSH1955-BSD | H59256.D | 1 | 12/14/12 | JP | n/a | n/a | MSH1955 |



**The QC reported here applies to the following samples:** **Method:** SW846 8260B

MC16475-4

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 48.9 | 98 | 48.7 | 97 | 0 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 53.6 | 107 | 53.7 | 107 | 0 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 206 | 82 | 217 | 87 | 5 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 48.3 | 97 | 48.9 | 98 | 1 | 77-137/25 |
| 100-41-4 | Ethylbenzene | 50 | 48.5 | 97 | 49.1 | 98 | 1 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 50.0 | 100 | 49.6 | 99 | 1 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 50.4 | 101 | 51.2 | 102 | 2 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 54.0 | 108 | 54.7 | 109 | 1 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 51.3 | 103 | 51.3 | 103 | 0 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 49.1 | 98 | 49.3 | 99 | 0 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 43.1 | 86 | 43.8 | 88 | 2 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 48.6 | 97 | 48.9 | 98 | 1 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 49.2 | 98 | 48.4 | 97 | 2 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 41.5 | 83 | 41.6 | 83 | 0 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 54.8 | 110 | 54.6 | 109 | 0 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 48.0 | 96 | 49.0 | 98 | 2 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 59.1 | 118 | 59.4 | 119 | 1 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 47.9 | 96 | 49.3 | 99 | 3 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 46.9 | 94 | 47.3 | 95 | 1 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 48.2 | 96 | 47.6 | 95 | 1 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 43.3 | 87 | 43.7 | 87 | 1 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 44.6 | 89 | 45.3 | 91 | 2 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 58.3 | 117 | 57.0 | 114 | 2 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 46.8 | 94 | 47.5 | 95 | 1 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 49.5 | 99 | 48.3 | 97 | 2 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 54.0 | 108 | 52.2 | 104 | 3 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 49.0 | 98 | 50.5 | 101 | 3 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 50.0 | 100 | 49.9 | 100 | 0 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 49.7 | 99 | 50.0 | 100 | 1 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 44.5 | 89 | 44.4 | 89 | 0 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 46.8 | 94 | 46.2 | 92 | 1 | 70-130/25 |
| | m,p-Xylene | 100 | 99.4 | 99 | 101 | 101 | 2 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 52.2 | 104 | 52.5 | 105 | 1 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 152 | 101 | 153 | 102 | 1 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSH1955-BS | H59255.D | 1 | 12/14/12 | JP | n/a | n/a | MSH1955 |
| MSH1955-BSD | H59256.D | 1 | 12/14/12 | JP | n/a | n/a | MSH1955 |



**The QC reported here applies to the following samples:** **Method:** SW846 8260B

MC16475-4

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 110% | 107% | 70-130% |
| 2037-26-5 | Toluene-D8 | 100% | 99% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 103% | 103% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16587-5MS | G122788.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |
| MC16587-5MSD | G122789.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |
| MC16587-5 | G122785.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |

**The QC reported here applies to the following samples:** **Method:** SW846 8260B

MC16475-1, MC16475-2, MC16475-3

| CAS No. | Compound | MC16587-5 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 5730 | 5900 | 103 | 6180 | 108 | 5 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 28700 | 9120 | 32* [a] | 9690 | 34* [a] | 6 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 5730 | 5750 | 100 | 6040 | 105 | 5 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 5730 | 6150 | 107 | 6110 | 107 | 1 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 5730 | 5390 | 94 | 5420 | 95 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 5730 | 6220 | 108 | 6220 | 108 | 0 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 5730 | 5380 | 94 | 5430 | 95 | 1 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 5730 | 4190 | 73 | 4280 | 75 | 2 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 5730 | 6020 | 105 | 6080 | 106 | 1 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 5730 | 6320 | 110 | 6210 | 108 | 2 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 5730 | 5790 | 101 | 5760 | 100 | 1 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 5730 | 6180 | 108 | 6190 | 108 | 0 | 70-130/30 |
| 98-06-6 | tert-Bntylbenzene | ND | | 5730 | 6510 | 114 | 6530 | 114 | 0 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 5730 | 7360 | 128 | 7250 | 126 | 2 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 5730 | 5230 | 91 | 5170 | 90 | 1 | 70-130/30 |
| 108-90-7 | Chlorohenzene | ND | | 5730 | 5980 | 104 | 5950 | 104 | 1 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 5730 | 6790 | 118 | 6740 | 118 | 1 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 5730 | 2080 | 36 | 2190 | 38 | 5 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 5730 | 6420 | 112 | 6420 | 112 | 0 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 5730 | 7740 | 135* [a] | 7800 | 136* [a] | 1 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 5730 | 6110 | 107 | 6110 | 107 | 0 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 5730 | 6450 | 112 | 6550 | 114 | 2 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 5730 | 4840 | 84 | 4910 | 86 | 1 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 5730 | 5930 | 103 | 5970 | 104 | 1 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 5730 | 5930 | 103 | 5980 | 104 | 1 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 5730 | 5550 | 97 | 5590 | 97 | 1 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 5730 | 4970 | 87 | 5000 | 87 | 1 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 5730 | 7080 | 123 | 7000 | 122 | 1 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 5730 | 5350 | 93 | 5390 | 94 | 1 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 5730 | 6680 | 116 | 6680 | 116 | 0 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 5730 | 6760 | 118 | 6780 | 118 | 0 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 5730 | 6540 | 114 | 6550 | 114 | 0 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 5730 | 6130 | 107 | 6130 | 107 | 0 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 5730 | 5410 | 94 | 5470 | 95 | 1 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 5730 | 6610 | 115 | 6460 | 113 | 2 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 5730 | 6110 | 107 | 6010 | 105 | 2 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16587-5MS | G122788.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |
| MC16587-5MSD | G122789.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |
| MC16587-5 | G122785.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |

**The QC reported here applies to the following samples:** **Method:** SW846 8260B

MC16475-1, MC16475-2, MC16475-3



| CAS No. | Compound | MC16587-5 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 5730 | 5620 | 98 | 5550 | 97 | 1 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 5730 | 5580 | 97 | 5630 | 98 | 1 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 28700 | 27300 | 95 | 27000 | 94 | 1 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 5730 | 5370 | 94 | 5410 | 94 | 1 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 36.7 | J | 5730 | 5670 | 98 | 5670 | 98 | 0 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 5730 | 5200 | 91 | 5260 | 92 | 1 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 5730 | 4750 | 83 | 4740 | 83 | 0 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 5730 | 6270 | 109 | 6310 | 110 | 1 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 5730 | 5870 | 102 | 5830 | 102 | 1 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 5730 | 6270 | 109 | 6340 | 111 | 1 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 5730 | 3920 | 68* [a] | 3910 | 68* [a] | 0 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 5730 | 5500 | 96 | 5520 | 96 | 0 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 5730 | 6900 | 120 | 6880 | 120 | 0 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 5730 | 6690 | 117 | 6890 | 120 | 3 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 5730 | 6320 | 110 | 6340 | 111 | 0 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 5730 | 5360 | 93 | 5340 | 93 | 0 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 5730 | 4980 | 87 | 5030 | 88 | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 5730 | 5680 | 99 | 5810 | 101 | 2 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 5730 | 5180 | 90 | 5200 | 91 | 0 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 5730 | 6100 | 106 | 6070 | 106 | 0 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 5730 | 6720 | 117 | 6970 | 122 | 4 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 5730 | 5790 | 101 | 5870 | 102 | 1 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 5730 | 6380 | 111 | 6340 | 111 | 1 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 5730 | 5510 | 96 | 5620 | 98 | 2 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 5730 | 5780 | 101 | 5740 | 100 | 1 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 5730 | 6180 | 108 | 6120 | 107 | 1 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 5730 | 5610 | 98 | 5680 | 99 | 1 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 5730 | 5610 | 98 | 5620 | 98 | 0 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 5730 | 5580 | 97 | 5590 | 97 | 0 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 5730 | 6510 | 114 | 6580 | 115 | 1 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 5730 | 6810 | 119 | 6650 | 116 | 2 | 70-130/30 |
| | m,p-Xylene | ND | | 11500 | 11600 | 101 | 11600 | 101 | 0 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 5730 | 6000 | 105 | 5990 | 104 | 0 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 80.3 | J | 17200 | 17600 | 102 | 17600 | 102 | 0 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16587-5MS | G122788.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |
| MC16587-5MSD | G122789.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |
| MC16587-5 | G122785.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |

**The QC reported here applies to the following samples:** **Method:** SW846 8260B

MC16475-1, MC16475-2, MC16475-3

| CAS No. | Surrogate Recoveries | MS | MSD | MC16587-5 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 106% | 106% | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 97% | 90% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | 98% | 90% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16475
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16456-3MS | H59277.D | 5 | 12/14/12 | JP | n/a | n/a | MSH1955 |
| MC16456-3MSD | H59278.D | 5 | 12/14/12 | JP | n/a | n/a | MSH1955 |
| MC16456-3 | H59265.D | 1 | 12/14/12 | JP | n/a | n/a | MSH1955 |



**The QC reported here applies to the following samples:** **Method:** SW846 8260B

MC16475-4

| CAS No. | Compound | MC16456-3 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 250 | 208 | 83 | 203 | 81 | 2 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 1250 | 541 | 43* [a] | 514 | 41* [a] | 5 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 250 | 216 | 86 | 196 | 78 | 10 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 250 | 252 | 101 | 238 | 95 | 6 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 250 | 260 | 104 | 252 | 101 | 3 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 250 | 271 | 108 | 250 | 100 | 8 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 250 | 315 | 126 | 294 | 118 | 7 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 250 | 289 | 116 | 276 | 110 | 5 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 250 | 275 | 110 | 254 | 102 | 8 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 250 | 232 | 93 | 216 | 86 | 7 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 250 | 268 | 107 | 254 | 102 | 5 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 250 | 278 | 111 | 266 | 106 | 4 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 250 | 292 | 117 | 279 | 112 | 5 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 250 | 224 | 90 | 221 | 88 | 1 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 250 | 368 | 147* [a] | 341 | 136* [a] | 8 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 250 | 261 | 104 | 247 | 99 | 6 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 250 | 261 | 104 | 245 | 98 | 6 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 250 | 77.4 | 31* [a] | 76.2 | 30* [a] | 2 | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 250 | 303 | 121 | 276 | 110 | 9 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 250 | 353 | 141* [a] | 335 | 134* [a] | 5 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 250 | 279 | 112 | 266 | 106 | 5 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 250 | 288 | 115 | 276 | 110 | 4 | 70-130/30 |
| 124-48-1 | Dihromochloromethane | ND | | 250 | 265 | 106 | 254 | 102 | 4 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 250 | 271 | 108 | 258 | 103 | 5 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 250 | 278 | 111 | 267 | 107 | 4 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 250 | 253 | 101 | 244 | 98 | 4 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 250 | 448 | 179* [a] | 428 | 171* [a] | 5 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | 2.7 | | 250 | 287 | 114 | 264 | 105 | 8 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 250 | 309 | 124 | 292 | 117 | 6 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | 2.0 | | 250 | 285 | 113 | 268 | 106 | 6 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | 1.8 | | 250 | 268 | 106 | 247 | 98 | 8 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 250 | 264 | 106 | 243 | 97 | 8 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 250 | 245 | 98 | 231 | 92 | 6 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 250 | 241 | 96 | 232 | 93 | 4 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 250 | 369 | 148* [a] | 342 | 137* [a] | 8 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 250 | 282 | 113 | 270 | 108 | 4 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16475
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16456-3MS | H59277.D | 5 | 12/14/12 | JP | n/a | n/a | MSH1955 |
| MC16456-3MSD | H59278.D | 5 | 12/14/12 | JP | n/a | n/a | MSH1955 |
| MC16456-3 | H59265.D | 1 | 12/14/12 | JP | n/a | n/a | MSH1955 |



**The QC reported here applies to the following samples:** **Method:** SW846 8260B

MC16475-4

| CAS No. | Compound | MC16456-3 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 250 | 258 | 103 | 248 | 99 | 4 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 250 | 290 | 116 | 278 | 111 | 4 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 1250 | 1080 | 86 | 1060 | 85 | 2 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 250 | 251 | 100 | 238 | 95 | 5 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 250 | 260 | 104 | 244 | 98 | 6 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 250 | 254 | 102 | 248 | 99 | 2 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 250 | 220 | 88 | 213 | 85 | 3 | 70-130/30 |
| 98-82-8 | Isopropylhenzene | ND | | 250 | 281 | 112 | 269 | 108 | 4 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 250 | 264 | 106 | 254 | 102 | 4 | 70-130/30 |
| 1634-04-4 | Methyl Tert Bntyl Ether | ND | | 250 | 268 | 107 | 250 | 100 | 7 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 250 | 222 | 89 | 211 | 84 | 5 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 250 | 265 | 106 | 253 | 101 | 5 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 250 | 266 | 106 | 245 | 98 | 8 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 250 | 195 | 78 | 196 | 78 | 1 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 250 | 283 | 113 | 271 | 108 | 4 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 250 | 252 | 101 | 237 | 95 | 6 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 250 | 319 | 128 | 301 | 120 | 6 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 250 | 248 | 99 | 240 | 96 | 3 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 250 | 255 | 102 | 241 | 96 | 6 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 250 | 259 | 104 | 246 | 98 | 5 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 250 | 204 | 82 | 204 | 82 | 0 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 250 | 218 | 87 | 214 | 86 | 2 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 250 | 337 | 135* [a] | 308 | 123 | 9 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 250 | 251 | 100 | 238 | 95 | 5 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 250 | 273 | 109 | 254 | 102 | 7 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 250 | 336 | 134* [a] | 309 | 124 | 8 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 250 | 258 | 103 | 246 | 98 | 5 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 250 | 259 | 104 | 249 | 100 | 4 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 250 | 258 | 103 | 249 | 100 | 4 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 250 | 240 | 96 | 232 | 93 | 3 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 250 | 315 | 126 | 298 | 119 | 6 | 70-130/30 |
| | m,p-Xylene | ND | | 500 | 537 | 107 | 501 | 100 | 7 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 250 | 279 | 112 | 262 | 105 | 6 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 750 | 816 | 109 | 763 | 102 | 7 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16456-3MS | H59277.D | 5 | 12/14/12 | JP | n/a | n/a | MSH1955 |
| MC16456-3MSD | H59278.D | 5 | 12/14/12 | JP | n/a | n/a | MSH1955 |
| MC16456-3 | H59265.D | 1 | 12/14/12 | JP | n/a | n/a | MSH1955 |

**The QC reported here applies to the following samples:** **Method:** SW846 8260B

MC16475-4

| CAS No. | Surrogate Recoveries | MS | MSD | MC16456-3 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 112% | 108% | 102% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 98% | 100% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 102% | 102% | 105% | 70-130% |

(a) Outside control limits dne to possible matrix interference. Refer to Blank Spike.

* = Outside of Control Limits.

# Volatile Internal Standard Area Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| **Check Std:** | MSG4880-CC4851 | **Injection Date:** | 12/11/12 |
| **Lab File ID:** | G122772.D | **Injection Time:** | 12:27 |
| **Instrument ID:** | GCMSG | **Method:** | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 282854 | 5.13 | 386682 | 6.27 | 185876 | 9.62 | 224758 | 12.25 | 55938 | 3.10 |
| Upper Limit [a] | 565708 | 5.63 | 773364 | 6.77 | 371752 | 10.12 | 449516 | 12.75 | 111876 | 3.60 |
| Lower Limit [b] | 141427 | 4.63 | 193341 | 5.77 | 92938 | 9.12 | 112379 | 11.75 | 27969 | 2.60 |
| **Lab Sample ID** | **IS 1 AREA** | **RT** | **IS 2 AREA** | **RT** | **IS 3 AREA** | **RT** | **IS 4 AREA** | **RT** | **IS 5 AREA** | **RT** |
| MSG4880-BS | 279361 | 5.13 | 378357 | 6.27 | 182624 | 9.62 | 221524 | 12.25 | 56696 | 3.10 |
| MSG4880-MB | 277809 | 5.13 | 374897 | 6.27 | 182434 | 9.62 | 223449 | 12.25 | 56868 | 3.10 |
| ZZZZZZ | 280559 | 5.13 | 380568 | 6.27 | 185584 | 9.62 | 225884 | 12.25 | 57852 | 3.10 |
| MC16475-2 | 279090 | 5.13 | 377463 | 6.27 | 191881 | 9.62 | 222529 | 12.25 | 55692 | 3.10 |
| MC16475-3 | 282810 | 5.13 | 378518 | 6.27 | 187896 | 9.62 | 225464 | 12.25 | 52941 | 3.10 |
| MC16475-1 | 287554 | 5.13 | 399703 | 6.27 | 222422 | 9.63 | 223337 | 12.25 | 58402 | 3.09 |
| MC16587-5 | 273233 | 5.13 | 377003 | 6.27 | 182140 | 9.62 | 225333 | 12.25 | 56555 | 3.10 |
| ZZZZZZ | 282645 | 5.13 | 383059 | 6.27 | 188745 | 9.62 | 230746 | 12.25 | 55493 | 3.10 |
| ZZZZZZ | 269959 | 5.13 | 368584 | 6.27 | 180494 | 9.62 | 220361 | 12.25 | 55539 | 3.10 |
| MC16587-5MS | 274869 | 5.13 | 372600 | 6.27 | 181935 | 9.62 | 224033 | 12.25 | 56514 | 3.10 |
| MC16587-5MSD | 272912 | 5.13 | 371776 | 6.27 | 180464 | 9.62 | 221659 | 12.25 | 58561 | 3.10 |
| ZZZZZZ | 276540 | 5.13 | 376992 | 6.27 | 182311 | 9.62 | 221396 | 12.25 | 58586 | 3.14 |
| ZZZZZZ | 274965 | 5.13 | 371930 | 6.27 | 181572 | 9.62 | 218163 | 12.25 | 56459 | 3.13 |
| ZZZZZZ | 271327 | 5.13 | 365963 | 6.27 | 178291 | 9.62 | 215271 | 12.25 | 62280 | 3.14 |
| ZZZZZZ | 272406 | 5.13 | 366878 | 6.27 | 177996 | 9.62 | 216973 | 12.25 | 54588 | 3.13 |
| ZZZZZZ | 276682 | 5.13 | 370068 | 6.27 | 179261 | 9.62 | 218768 | 12.25 | 57430 | 3.13 |
| ZZZZZZ | 282570 | 5.13 | 381461 | 6.27 | 181918 | 9.62 | 183642 | 12.25 | 53900 | 3.10 |

**IS 1** = Pentafluorobenzene
**IS 2** = 1,4-Difluorobenzene
**IS 3** = Cblorobenzene-D5
**IS 4** = 1,4-Dichlorobenzene-d4
**IS 5** = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.5.1

# Volatile Internal Standard Area Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| **Check Std:** | MSH1955-CC1910 | **Injection Date:** | 12/14/12 |
| **Lab File ID:** | H59254.D | **Injection Time:** | 10:53 |
| **Instrument ID:** | GCMSH | **Method:** | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 205111 | 8.70 | 298820 | 9.57 | 138594 | 12.83 | 160194 | 15.39 | 42130 | 6.28 |
| Upper Limit [a] | 410222 | 9.20 | 597640 | 10.07 | 277188 | 13.33 | 320388 | 15.89 | 84260 | 6.78 |
| Lower Limit [b] | 102556 | 8.20 | 149410 | 9.07 | 69297 | 12.33 | 80097 | 14.89 | 21065 | 5.78 |
| **Lab Sample ID** | **IS 1 AREA** | **RT** | **IS 2 AREA** | **RT** | **IS 3 AREA** | **RT** | **IS 4 AREA** | **RT** | **IS 5 AREA** | **RT** |
| MSH1955-BS | 208338 | 8.71 | 304398 | 9.57 | 142745 | 12.83 | 163790 | 15.39 | 44324 | 6.28 |
| MSH1955-BSD | 210143 | 8.70 | 305504 | 9.57 | 140110 | 12.83 | 161046 | 15.40 | 43370 | 6.27 |
| MSH1955-MB | 199776 | 8.70 | 280720 | 9.57 | 124047 | 12.83 | 138503 | 15.40 | 42541 | 6.28 |
| MC16475-4 | 186079 | 8.71 | 259481 | 9.57 | 114612 | 12.83 | 125648 | 15.40 | 34621 | 6.28 |
| ZZZZZZ | 177675 | 8.71 | 248541 | 9.58 | 109129 | 12.83 | 121952 | 15.40 | 34442 | 6.28 |
| ZZZZZZ | 187804 | 8.71 | 265102 | 9.57 | 116020 | 12.83 | 127349 | 15.40 | 38136 | 6.28 |
| ZZZZZZ | 186845 | 8.71 | 263040 | 9.57 | 113872 | 12.83 | 126287 | 15.40 | 36722 | 6.28 |
| ZZZZZZ | 183918 | 8.71 | 256640 | 9.57 | 111601 | 12.83 | 123860 | 15.40 | 36361 | 6.28 |
| ZZZZZZ | 184064 | 8.71 | 257870 | 9.57 | 111359 | 12.83 | 124808 | 15.40 | 35934 | 6.28 |
| ZZZZZZ | 176071 | 8.70 | 246479 | 9.57 | 107189 | 12.83 | 121245 | 15.40 | 34844 | 6.28 |
| MC16456-3 | 177621 | 8.70 | 245817 | 9.57 | 108089 | 12.83 | 120402 | 15.40 | 35856 | 6.28 |
| ZZZZZZ | 173041 | 8.71 | 238873 | 9.57 | 104448 | 12.83 | 118397 | 15.40 | 35382 | 6.28 |
| ZZZZZZ | 175526 | 8.70 | 241850 | 9.57 | 107840 | 12.83 | 118552 | 15.40 | 35202 | 6.28 |
| ZZZZZZ | 181901 | 8.70 | 268972 | 9.57 | 108016 | 12.83 | 138551 | 15.40 | 38575 | 6.28 |
| ZZZZZZ | 183492 | 8.71 | 255192 | 9.57 | 107637 | 12.83 | 131717 | 15.40 | 36368 | 6.28 |
| ZZZZZZ | 178452 | 8.70 | 244687 | 9.57 | 106922 | 12.83 | 120619 | 15.40 | 36025 | 6.28 |
| ZZZZZZ | 175485 | 8.71 | 241537 | 9.57 | 105707 | 12.83 | 119650 | 15.40 | 36268 | 6.29 |
| ZZZZZZ | 171606 | 8.71 | 236835 | 9.57 | 104015 | 12.83 | 117068 | 15.40 | 33588 | 6.28 |
| ZZZZZZ | 167049 | 8.71 | 253558 | 9.57 | 104226 | 12.83 | 114712 | 15.40 | 33164 | 6.29 |
| MC16456-3MS | 179632 | 8.70 | 264470 | 9.57 | 125272 | 12.83 | 148945 | 15.39 | 37303 | 6.27 |
| MC16456-3MSD | 198315 | 8.70 | 286384 | 9.57 | 135779 | 12.83 | 156725 | 15.39 | 38138 | 6.27 |

**IS 1** = Pentaflnorobenzene
**IS 2** = 1,4-Diflnorobenzene
**IS 3** = Chlorobenzene-D5
**IS 4** = 1,4-Dichlorobenzene-d4
**IS 5** = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of cbeck standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of cbeck standard area; Retention time -0.5 minntes.

6.5.2

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# Volatile Surrogate Recovery Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

**Method:** SW846 8260B **Matrix:** AQ

**Samples and QC shown here apply to the above method**

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC16475-4 | H59258.D | 100.0 | 100.0 | 107.0 |
| MC16456-3MS | H59277.D | 112.0 | 98.0 | 102.0 |
| MC16456-3MSD | H59278.D | 108.0 | 98.0 | 102.0 |
| MSH1955-BS | H59255.D | 110.0 | 100.0 | 103.0 |
| MSH1955-BSD | H59256.D | 107.0 | 99.0 | 103.0 |
| MSH1955-MB | H59257.D | 101.0 | 99.0 | 106.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC16475
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Method: SW846 8260B | Matrix: SO |
|---|---|

**Samples and QC shown here apply to the above method**

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC16475-1 | G122784.D | 99.0 | 91.0 | 103.0 |
| MC16475-2 | G122782.D | 105.0 | 97.0 | 98.0 |
| MC16475-3 | G122783.D | 101.0 | 94.0 | 94.0 |
| MC16587-5MS | G122788.D | 106.0 | 97.0 | 97.0 |
| MC16587-5MSD | G122789.D | 106.0 | 97.0 | 98.0 |
| MSG4880-BS | G122773.D | 109.0 | 100.0 | 101.0 |
| MSG4880-MB | G122775.D | 111.0 | 103.0 | 101.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

6.6.2

6

New England ACCUTEST LABORATORIES

## GC Volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31352-MB | BK19728.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |

**The QC reported here applies to the following samples:** **Method:** SW846 8011

MC16475-1, MC16475-2, MC16475-3



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 2.5 | 1.1 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.5 | 0.96 | ug/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 98% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 108% | 61-167% |

# Method Blank Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31406-MB | BK19937.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |

**The QC reported here applies to the following samples:** **Method:** SW846 8011

MC16475-4



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.015 | 0.013 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.015 | 0.010 | ug/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 95% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 100% | 36-173% |

# Blank Spike Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31352-BS | BK19729.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |

**The QC reported here applies to the following samples:** **Method:** SW846 8011

MC16475-1, MC16475-2, MC16475-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 65 | 66.5 | 102 | 59-142 |
| 106-93-4 | 1,2-Dibromoethane | 65 | 60.3 | 93 | 56-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 97% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 107% | 61-167% |

* = Outside of Control Limits.

# Blank Spike Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31406-BS | BK19938.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |

**The QC reported here applies to the following samples:** **Method:** SW846 8011

MC16475-4

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 0.071 | 0.067 | 94 | 60-140 |
| 106-93-4 | 1,2-Dibromoethane | 0.071 | 0.071 | 100 | 60-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 96% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 104% | 36-173% |

7.2.2

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* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16475
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31352-MS | BK19730.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |
| OP31352-MSD | BK19731.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |
| MC16336-6 | BK19735.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |

**The QC reported here applies to the following samples:** **Method:** SW846 8011

MC16475-1, MC16475-2, MC16475-3



| CAS No. | Compound | MC16336-6 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 367 | 337 | 92 | 382 | 91 | 13 | 40-156/27 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 367 | 304 | 83 | 342 | 82 | 12 | 48-141/27 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC16336-6 | Limits |
|---|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 91% | 85% | 94% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 99% | 91% | 96% | 61-167% |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31406-MS | BK19941.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |
| OP31406-MSD | BK19942.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |
| MC16600-6 | BK19943.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |

**The QC reported here applies to the following samples:** **Method:** SW846 8011

MC16475-4

| CAS No. | Compound | MC16600-6 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 0.071 | 0.066 | 93 | 0.064 | 90 | 3 | 64-141/29 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 0.071 | 0.072 | 101 | 0.067 | 94 | 7 | 63-163/27 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC16600-6 | Limits |
|---|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 100% | 100% | 99% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 110% | 108% | 107% | 36-173% |

* = Outside of Control Limits.

# Volatile Surrogate Recovery Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Method: SW846 8011 | Matrix: AQ |
|---|---|

**Samples and QC shown here apply to the above method**

| Lab Sample ID | Lab File ID | S1 [a] | S1 [b] |
|---|---|---|---|
| MC16475-4 | BK19944.D | 89.0 | 100.0 |
| OP31406-BS | BK19938.D | 96.0 | 104.0 |
| OP31406-MB | BK19937.D | 95.0 | 100.0 |
| OP31406-MS | BK19941.D | 100.0 | 110.0 |
| OP31406-MSD | BK19942.D | 100.0 | 108.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Bromofluorobenzene (S) | 36-173% |

(a) Recovery from GC sigual #1
(b) Recovery from GC signal #2

# Volatile Surrogate Recovery Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| Method: SW846 8011 | Matrix: SO |
|---|---|

**Samples and QC shown here apply to the above method**

| Lab Sample ID | Lab File ID | S1 [a] | S1 [b] |
|---|---|---|---|
| MC16475-1 | BK19744.D | 74.0 | 69.0 |
| MC16475-2 | BK19745.D | 71.0 | 75.0 |
| MC16475-3 | BK19746.D | 79.0 | 75.0 |
| OP31352-BS | BK19729.D | 97.0 | 107.0 |
| OP31352-MB | BK19728.D | 98.0 | 108.0 |
| OP31352-MS | BK19730.D | 91.0 | 99.0 |
| OP31352-MSD | BK19731.D | 85.0 | 91.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Bromofluorobenzene (S) | 61-167% |

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2

7.4.2

7

# GC Surrogate Retention Time Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| **Check Std:** | GBK712-ICC712 | **Injection Date:** | 12/09/12 |
| **Lab File ID:** | BK19722.D | **Injection Time:** | 17:47 |
| **Instrument ID:** | GCBK | **Method:** | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.90 | 4.56 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| OP31352-MB | BK19728.D | 12/09/12 | 20:14 | 4.90 | 4.57 |
| OP31352-BS | BK19729.D | 12/09/12 | 20:38 | 4.90 | 4.56 |
| OP31352-MS | BK19730.D | 12/09/12 | 21:03 | 4.90 | 4.57 |
| OP31352-MSD | BK19731.D | 12/09/12 | 21:27 | 4.90 | 4.57 |
| ZZZZZZ | BK19732.D | 12/09/12 | 21:52 | 4.90 | 4.56 |
| ZZZZZZ | BK19733.D | 12/09/12 | 22:16 | 4.90 | 4.56 |
| ZZZZZZ | BK19734.D | 12/09/12 | 22:41 | 4.90 | 4.56 |
| MC16336-6 | BK19735.D | 12/09/12 | 23:05 | 4.90 | 4.57 |
| ZZZZZZ | BK19736.D | 12/09/12 | 23:30 | 4.90 | 4.56 |
| ZZZZZZ | BK19737.D | 12/09/12 | 23:55 | 4.90 | 4.56 |

**Surrogate Compounds**

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

# GC Surrogate Retention Time Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| **Check Std:** | GBK712-CC712 | **Injection Date:** | 12/10/12 |
| **Lab File ID:** | BK19738.D | **Injection Time:** | 00:20 |
| **Instrument ID:** | GCBK | **Method:** | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.90 | 4.56 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| ZZZZZZ | BK19739.D | 12/10/12 | 00:44 | 4.90 | 4.57 |
| ZZZZZZ | BK19740.D | 12/10/12 | 01:09 | 4.90 | 4.57 |
| ZZZZZZ | BK19741.D | 12/10/12 | 01:33 | 4.90 | 4.56 |
| ZZZZZZ | BK19742.D | 12/10/12 | 01:58 | 4.90 | 4.56 |
| ZZZZZZ | BK19743.D | 12/10/12 | 02:23 | 4.90 | 4.56 |
| MC16475-1 | BK19744.D | 12/10/12 | 02:47 | 4.90 | 4.56 |
| MC16475-2 | BK19745.D | 12/10/12 | 03:12 | 4.90 | 4.56 |
| MC16475-3 | BK19746.D | 12/10/12 | 03:36 | 4.90 | 4.56 |
| ZZZZZZ | BK19747.D | 12/10/12 | 04:01 | 4.90 | 4.56 |
| ZZZZZZ | BK19748.D | 12/10/12 | 04:25 | 4.90 | 4.56 |

**Surrogate Compounds**

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

7.5.2

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# GC Surrogate Retention Time Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| **Check Std:** | GBK716-ICC716 | **Injection Date:** | 12/13/12 |
| **Lab File ID:** | BK19932.D | **Injection Time:** | 18:03 |
| **Instrument ID:** | GCBK | **Method:** | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.85 | 4.52 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| ZZZZZZ | BK19935A.D | 12/13/12 | 19:16 | 4.85 | 4.52 |
| ZZZZZZ | BK19935B.D | 12/13/12 | 19:16 | 4.85 | 4.52 |
| OP31406-MB | BK19937.D | 12/13/12 | 20:04 | 4.85 | 4.52 |
| OP31405-MB | BK19937A.D | 12/13/12 | 20:04 | 4.85 | 4.52 |
| OP31406-BS | BK19938.D | 12/13/12 | 20:28 | 4.85 | 4.52 |
| OP31405-BS | BK19938A.D | 12/13/12 | 20:28 | 4.85 | 4.52 |
| OP31405-BSD | BK19939.D | 12/13/12 | 20:52 | 4.85 | 4.52 |
| ZZZZZZ | BK19940.D | 12/13/12 | 21:17 | 4.85 | 4.52 |
| OP31406-MS | BK19941.D | 12/13/12 | 21:41 | 4.85 | 4.52 |
| OP31406-MSD | BK19942.D | 12/13/12 | 22:06 | 4.85 | 4.52 |
| MC16600-6 | BK19943.D | 12/13/12 | 22:30 | 4.85 | 4.52 |
| MC16475-4 | BK19944.D | 12/13/12 | 22:55 | 4.85 | 4.52 |
| ZZZZZZ | BK19945.D | 12/13/12 | 23:19 | 4.85 | 4.52 |
| ZZZZZZ | BK19946.D | 12/13/12 | 23:43 | 4.85 | 4.52 |

**Surrogate Compounds**

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

7.5.3

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New England ACCUTEST LABORATORIES

## General Chemistry

# QC Data Summaries

Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



**Job Number:** MC16475
**Account:** SHELLWIC Shell Oil
**Project:** URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| **Sample:** MC16475-1 | **Analyzed:** 07-DEC-12 by CF | | **Method:** SM21 2540 B MOD. |
| **ClientID:** MW-19-13 | | | |
| Wet Weight (Total) | 37.396 | g | |
| Tare Weight | 27.986 | g | |
| Dry Weight (Total) | 35.057 | g | |
| Solids, Percent | 75.1 | % | |
| **Sample:** MC16475-2 | **Analyzed:** 07-DEC-12 by CF | | **Method:** SM21 2540 B MOD. |
| **ClientID:** MW-19-20 | | | |
| Wet Weight (Total) | 31.154 | g | |
| Tare Weight | 21.029 | g | |
| Dry Weight (Total) | 28.331 | g | |
| Solids, Percent | 72.1 | % | |
| **Sample:** MC16475-3 | **Analyzed:** 07-DEC-12 by CF | | **Method:** SM21 2540 B MOD. |
| **ClientID:** MW-19-32 | | | |
| Wet Weight (Total) | 29.674 | g | |
| Tare Weight | 19.003 | g | |
| Dry Weight (Total) | 26.935 | g | |
| Solids, Percent | 74.3 | % | |

8.1

# Roxana Drilling 2013 Data Review

**Laboratory SDG: MC16587**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 2/21/2013**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| MW-16-14 | MW-16-27 |
| MW-16-37 | TRIP BLANK |
| MW-20-11 | MW-20-21 |
| MW-20-41 | |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS recoveries were outside evaluation criteria. VOC surrogate recovery for dibromofluoromethane was outside evaluation criteria in method blank MSG4879-MB. VOC MS/MSD recoveries were outside of evaluation criteria for sample MW-20-11. The initial calibration verification recovery for acrolein and vinyl acetate exceeded 50 percent difference (%D). The continuing calibration verification recovery for acrolein and 2-chloroethyl vinyl ether exceeded 50 percent difference (%D). These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 0.6°C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required. The methanol labeled vial for sample MW-16-37 was received by the laboratory without the methanol preservative. The unpreserved vial contained sufficient sample volume to complete the requested analysis. Additionally, the laboratory issued a letter indicating that VOC trip blanks were received headspace free, and that the cooler receipt form had been incorrectly marked as not applicable with regards to trip blanks and VOC headspace.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSG4879-BS | VOCs | Acrolein | **35** | NA | 70-130 |
| MSG4879-BS | VOCs | Carbon disulfide | **145** | NA | 70-130 |
| MSG4879-BS | VOCs | Chloromethane | **152** | NA | 70-130 |
| MSG4879-BS | VOCs | 1,1-Dichloroethane | **137** | NA | 70-130 |
| MSG4879-BS | VOCs | 2,2-Dichloropropane | **141** | NA | 70-130 |
| MSG4879-BS | VOCs | Methylene chloride | **132** | NA | 70-130 |
| MSG4879-BS | VOCs | 1,2,3-Trichlorobenzene | **132** | NA | 70-130 |
| MSG4880-BS | VOCs | Acrolein | **40** | NA | 70-130 |
| MSG4880-BS | VOCs | 4-Methyl-2-pentanone (MIBK) | **66** | NA | 70-130 |
| MSN2676-BS | VOCs | Acrolein | **56** | NA | 70-130 |
| MSN2676-BS | VOCs | Acrylonitrile | **472** | NA | 70-130 |
| MSN2676-BS | VOCs | Dichlorodifluoromethane | **138** | NA | 70-130 |
| MSN2676-BS | VOCs | 2,2-Dichloropropane | **69** | NA | 70-130 |

Analytical data that required qualification based on LCS/LCSD data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS MSN2676-BS was associated with the trip blank. Trip blanks are quality control samples and are not qualified.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| MW-16-14 | VOCs | Acrolein | **UJ** |
| MW-16-27 | VOCs | Acrolein | **UJ** |
| MW-16-37 | VOCs | Acrolein | **UJ** |
| MW-20-11 | VOCs | Acrolein | **UJ** |
| MW-20-11 | VOCs | 4-Methyl-2-pentanone (MIBK) | **UJ** |
| MW-20-21 | VOCs | Acrolein | **UJ** |
| MW-20-21 | VOCs | 4-Methyl-2-pentanone (MIBK) | **UJ** |
| MW-20-41 | VOCs | Acrolein | **UJ** |
| MW-20-41 | VOCs | 4-Methyl-2-pentanone (MIBK) | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

No

| Sample ID | Parameter | Surrogate | Recovery | Criteria |
|---|---|---|---|---|
| MSG4879-MB | VOCs | Dibromofluoromethane | **133** | 70-130 |

Method blank MSG4879-MB is a quality control sample and is not qualified. No qualification of data was required.

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, although not requested, sample MW-20-11 was spiked and analyzed for VOCs.

*Were MS/MSD recoveries within evaluation criteria?*

No

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/ RPD Criteria |
|---|---|---|---|---|---|
| MW-20-11 | VOCs | Acrolein | **32/34** | 6 | 70-130/30 |
| MW-20-11 | VOCs | Chloromethane | **135/136** | 1 | 70-130/30 |
| MW-20-11 | VOCs | 4-Methyl-2-pentanone (MIBK) | **68/68** | 0 | 70-130/30 |

USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone and LCS recoveries were within evaluation criteria with the exception of compounds listed and qualified as appropriate in Section 5.0 of this data review. No further qualification of the data was required.

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

No

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

Yes, samples MW-16-14, MW-16-27, and MW-16-37 were associated with the initial calibration verification recovery for acrolein and vinyl acetate that exceeded 50 percent difference (%D). Samples MW-20-11, MW-20-21 and MW-20-41 were associated with continuing calibration verification recovery for acrolein and 2-chloroethyl vinyl ether that exceeded 50 percent difference (%D). Acrolein was previously qualified due to LCS/LCSD data in Section 5.0 of this review. Analytes in samples associated with ICV and CCV %D greater than 50% were qualified as summarized in the following table.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| MW-16-14 | VOCs | Vinyl acetate | **UJ** |
| MW-16-27 | VOCs | Vinyl acetate | **UJ** |
| MW-16-37 | VOCs | Vinyl acetate | **UJ** |
| MW-20-11 | VOCs | 2-Chloroethyl vinyl ether | **UJ** |
| MW-20-21 | VOCs | 2-Chloroethyl vinyl ether | **UJ** |
| MW-20-41 | VOCs | 2-Chloroethyl vinyl ether | **UJ** |

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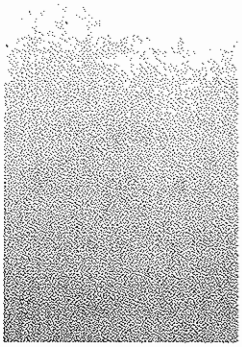
02/19/13





## Technical Report for

Shell Oil

URSMOSTL: Roxana Drilling, Roxana, IL

21562735.00015

Accutest Job Number: MC16587

Sampling Dates: 12/04/12 - 12/05/12

Report to:

URS Corporation

elizabeth.kunkel@URS.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **92**

Reviewed on 2/21/2013

Reza Pand
Lab Director

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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# Sample Summary

Shell Oil

Job No: MC16587

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562735.00015

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| MC16587-1 | 12/04/12 | 14:40 | WPJS | 12/06/12 | SO | Soil | MW-16-14 |
| MC16587-2 | 12/04/12 | 14:50 | WPJS | 12/06/12 | SO | Soil | MW-16-27 |
| MC16587-3 | 12/04/12 | 14:55 | WPJS | 12/06/12 | SO | Soil | MW-16-37 |
| MC16587-4 | 12/04/12 | 00:00 | WPJS | 12/06/12 | AQ | Trip Blank Water | TRIP BLANK |
| MC16587-5 | 12/05/12 | 13:25 | WPJS | 12/06/12 | SO | Soil | MW-20-11 |
| MC16587-6 | 12/05/12 | 13:35 | WPJS | 12/06/12 | SO | Soil | MW-20-21 |
| MC16587-7 | 12/05/12 | 13:40 | WPJS | 12/06/12 | SO | Soil | MW-20-41 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

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# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC16587 |
| **Site:** | URSMOSTL: Roxana Drilling, Roxana, IL | **Report Date** | 12/21/2012 10:05:59 AM |

6 Sample(s), 1 Trip Blank(s) were collected on between 12/04/2012 and 12/05/2012 and were received at Accutest on 12/06/2012 properly preserved, at 0.6 Deg. C and intact. These Samples received an Accutest job number of MC16587. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. 1-Chlorohexane was searched in the library search and reported only if detections were found.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix:** AQ **Batch ID:** MSN2676

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16648-12MS, MC16648-12MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 2,2-Dichloropropane, Acrolein, Dichlorodifluoromethane are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Dichlorodifluoromethane, Acrolein, Acrylonitrile are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSN2676-BS for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

**Matrix:** SO **Batch ID:** MSG4879

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16503-2MS, MC16503-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 1,1-Dichloroethane, 1,2,3-Trichlorobenzene, 2,2-Dichloropropane, Acrolein, Carbon disulfide, Chloromethane, Methylene chloride are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 2-Hexanone, Acrolein, Bromoform, Carbon disulfide, Chloromethane, tert-Butylbenzene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2-Hexanone, Acrolein, Bromoform, Chloromethane, tert-Butylbenzene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSG4879-MB for Dibromofluoromethane: Outside control limits. Associated target analytes are non-detect.
- Initial calibration verification MSG4851-ICV4851 for Acrolein, vinyl acetate exceeds 50% Difference. Acrolein and vinyl acetate are within criteria in continuing calibration check standard MSG4879-CC4851.

**Matrix:** SO **Batch ID:** MSG4880

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16587-5MS, MC16587-5MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 4-Methyl-2-pentanone (MIBK), Acrolein are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for 4-Methyl-2-pentanone (MIBK), Acrolein, Chloromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Continuing calibration check stanard MSG4880-CC4851 for acrolein, 2-chloroethyl vinyl ether exceed 50% Difference. Acrolein, 2-chloroethyl vinyl ether is considered a difficult method analyte.

## Volatiles by GC By Method SW846 8011

| Matrix: AQ | Batch ID: OP31406 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16600-6MS, MC16600-6MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

| Matrix: SO | Batch ID: OP31352 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16336-6MS, MC16336-6MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix: SO | Batch ID: GN41201 |
|---|---|

- Sample(s) MC16587-1DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC16587).

ACCUTEST
LABORATORIES

Elizabeth Kunkel
URS
St. Louis, MO

**February 15, 2013**

Accutest Job: MC16587

Ms. Elizabeth Kunkel,

On the report for SDG MC16587, the sample receipt confirmation was marked incorrectly by the lab. The VOC vials that were sent for VOC analysis were received headspace free. The N/A box had been incorrectly marked.

Sincerely,

Jeremy M. Vienneau
Accutest Laboratories of New England, Inc.

# Summary of Hits



Job Number: MC16587
Account: Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Collected: 12/04/12 thru 12/05/12

| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| MC16587-1 | MW-16-14 | | | | | |
| n-Butylbenzene | | 0.0323 J | 0.56 | 0.021 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0320 J | 0.23 | 0.027 | mg/kg | SW846 8260B |
| Naphthalene | | 0.201 J | 0.56 | 0.14 | mg/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | | 0.0894 J | 0.56 | 0.025 | mg/kg | SW846 8260B |
| 1,3,5-Trimethylbenzene | | 0.0408 J | 0.56 | 0.024 | mg/kg | SW846 8260B |
| o-Xylene | | 0.0400 J | 0.23 | 0.027 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.128 J | 0.23 | 0.027 | mg/kg | SW846 8260B |
| MC16587-2 | MW-16-27 | | | | | |
| n-Butylbenzene | | 0.0233 J | 0.56 | 0.021 | mg/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | | 0.0467 J | 0.56 | 0.025 | mg/kg | SW846 8260B |
| 1,3,5-Trimethylbenzene | | 0.0286 J | 0.56 | 0.024 | mg/kg | SW846 8260B |
| o-Xylene | | 0.0281 J | 0.22 | 0.027 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0852 J | 0.22 | 0.027 | mg/kg | SW846 8260B |
| MC16587-3 | MW-16-37 | | | | | |
| 1,2,4-Trimethylbenzene | | 0.0197 J | 0.27 | 0.012 | mg/kg | SW846 8260B |
| 1,3,5-Trimethylbenzene | | 0.0131 J | 0.27 | 0.012 | mg/kg | SW846 8260B |
| o-Xylene | | 0.0157 J | 0.11 | 0.013 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0454 J | 0.11 | 0.013 | mg/kg | SW846 8260B |
| MC16587-4 | TRIP BLANK | | | | | |
| No hits reported in this sample. | | | | | | |
| MC16587-5 | MW-20-11 | | | | | |
| Ethylbenzene | | 0.0367 J | 0.23 | 0.028 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0803 J | 0.23 | 0.027 | mg/kg | SW846 8260B |
| MC16587-6 | MW-20-21 | | | | | |
| Benzene | | 0.0585 J | 0.062 | 0.036 | mg/kg | SW846 8260B |
| sec-Butylbenzene | | 0.365 J | 0.62 | 0.028 | mg/kg | SW846 8260B |
| Chlorobenzene | | 0.0401 J | 0.25 | 0.034 | mg/kg | SW846 8260B |
| Isopropylbenzene | | 0.110 J | 0.62 | 0.028 | mg/kg | SW846 8260B |
| p-Isopropyltoluene | | 0.0854 J | 0.62 | 0.022 | mg/kg | SW846 8260B |
| n-Propylbenzene | | 0.178 J | 0.62 | 0.13 | mg/kg | SW846 8260B |

# Summary of Hits

Job Number: MC16587
Account: Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Collected: 12/04/12 thru 12/05/12

| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| MC16587-7 | MW-20-41 | | | | | |
| Ethylbenzene | | 0.0345 J | 0.23 | 0.028 | mg/kg | SW846 8260B |
| Isopropylbenzene | | 0.0314 J | 0.57 | 0.026 | mg/kg | SW846 8260B |
| o-Xylene | | 0.0398 J | 0.23 | 0.027 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0398 J | 0.23 | 0.027 | mg/kg | SW846 8260B |

New England ACCUTEST LABORATORIES

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## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-16-14 | | |
| Lab Sample ID: | MC16587-1 | Date Sampled: | 12/04/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | 96.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | G122738.D | 1 | 12/10/12 | JM | n/a | n/a | MSG4879 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.68 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.56 | 0.14 | mg/kg | |
| 107-02-8 | Acrolein | ND | 2.8 | 1.1 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 2.8 | 0.14 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.056 | 0.033 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.56 | 0.025 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.56 | 0.042 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.23 | 0.024 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.23 | 0.23 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.23 | 0.059 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.56 | 0.14 | mg/kg | |
| 104-51-8 | n-Butylbenzene | 0.0323 | 0.56 | 0.021 | mg/kg | J |
| 135-98-8 | sec-Butylbenzene | ND | 0.56 | 0.026 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.56 | 0.099 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.56 | 0.019 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.23 | 0.082 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.23 | 0.031 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.56 | 0.14 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.56 | 0.23 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.23 | 0.058 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.56 | 0.052 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.56 | 0.12 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.56 | 0.026 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.23 | 0.033 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.23 | 0.024 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.23 | 0.025 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.23 | 0.024 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.23 | 0.13 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.23 | 0.030 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.23 | 0.032 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.23 | 0.041 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.23 | 0.034 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.23 | 0.032 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-16-14 | | |
| Lab Sample ID: | MC16587-1 | Date Sampled: | 12/04/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | 96.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.23 | 0.042 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.56 | 0.026 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.56 | 0.098 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.56 | 0.030 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.23 | 0.019 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.23 | 0.056 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 2.8 | 2.8 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.56 | 0.077 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0320 | 0.23 | 0.027 | mg/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 0.56 | 0.052 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.56 | 0.056 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.56 | 0.026 | mg/kg | |
| 99-87-6 | p-Isopropyltolnene | ND | 0.56 | 0.020 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.23 | 0.032 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.56 | 0.056 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.56 | 0.056 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.23 | 0.13 | mg/kg | |
| 91-20-3 | Naphthalene | 0.201 | 0.56 | 0.14 | mg/kg | J |
| 103-65-1 | n-Propylbenzene | ND | 0.56 | 0.11 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.56 | 0.026 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.56 | 0.11 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.23 | 0.048 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.23 | 0.026 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.56 | 0.096 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.56 | 0.027 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.56 | 0.026 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.23 | 0.035 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.23 | 0.083 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.23 | 0.024 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.23 | 0.034 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.56 | 0.033 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 0.0894 | 0.56 | 0.025 | mg/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 0.0408 | 0.56 | 0.024 | mg/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 0.56 | 0.063 | mg/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 0.23 | 0.031 | mg/kg | |
| | m,p-Xylene | ND | 0.23 | 0.089 | mg/kg | |
| 95-47-6 | o-Xylene | 0.0400 | 0.23 | 0.027 | mg/kg | J |
| 1330-20-7 | Xylene (total) | 0.128 | 0.23 | 0.027 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-16-14 | | |
| Lab Sample ID: | MC16587-1 | Date Sampled: | 12/04/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | 96.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 102% | | 70-130% |
| 2037-26-5 | Tolnene-D8 | 94% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated valne
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-16-14 | | |
| Lab Sample ID: | MC16587-1 | Date Sampled: | 12/04/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 96.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19747.D | 1 | 12/10/12 | AP | 12/10/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.2 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0011 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.00099 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 72% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 76% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-16-27 | | |
| Lab Sample ID: | MC16587-2 | Date Sampled: | 12/04/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | 96.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | G122739.D | 1 | 12/10/12 | JM | n/a | n/a | MSG4879 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.68 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.56 | 0.14 | mg/kg | |
| 107-02-8 | Acrolein | ND | 2.8 | 1.1 | mg/kg | |
| 107-13-1 | Acrylonitrile | ND | 2.8 | 0.14 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.056 | 0.033 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.56 | 0.025 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.56 | 0.042 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.22 | 0.024 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.22 | 0.22 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.22 | 0.058 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.56 | 0.14 | mg/kg | |
| 104-51-8 | n-Butylbenzene | 0.0233 | 0.56 | 0.021 | mg/kg | J |
| 135-98-8 | sec-Butylbenzene | ND | 0.56 | 0.026 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.56 | 0.099 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.56 | 0.018 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.22 | 0.081 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.22 | 0.031 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.56 | 0.14 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.56 | 0.22 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.22 | 0.058 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.56 | 0.052 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.56 | 0.12 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.56 | 0.025 | mg/kg | |
| 124-48-1 | Dihromochloromethane | ND | 0.22 | 0.033 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.22 | 0.024 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.22 | 0.025 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.22 | 0.024 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.22 | 0.13 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.22 | 0.030 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.22 | 0.032 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.22 | 0.041 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.22 | 0.034 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.22 | 0.032 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-16-27 | | |
| Lab Sample ID: | MC16587-2 | Date Sampled: | 12/04/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | 96.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.22 | 0.042 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.56 | 0.026 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.56 | 0.097 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.56 | 0.029 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.22 | 0.019 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.22 | 0.056 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 2.8 | 2.8 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.56 | 0.076 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.22 | 0.027 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.56 | 0.052 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.56 | 0.056 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.56 | 0.026 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.56 | 0.020 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.22 | 0.032 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.56 | 0.056 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.56 | 0.055 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.22 | 0.13 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.56 | 0.14 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.56 | 0.11 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.56 | 0.026 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.56 | 0.11 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.22 | 0.048 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.22 | 0.026 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.56 | 0.095 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.56 | 0.027 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.56 | 0.026 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.22 | 0.035 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.22 | 0.082 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.22 | 0.024 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.22 | 0.034 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.56 | 0.033 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 0.0467 | 0.56 | 0.025 | mg/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 0.0286 | 0.56 | 0.024 | mg/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 0.56 | 0.063 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.22 | 0.031 | mg/kg | |
| | m,p-Xylene | ND | 0.22 | 0.088 | mg/kg | |
| 95-47-6 | o-Xylene | 0.0281 | 0.22 | 0.027 | mg/kg | J |
| 1330-20-7 | Xylene (total) | 0.0852 | 0.22 | 0.027 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | MW-16-27 | | |
| Lab Sample ID: | MC16587-2 | Date Sampled: | 12/04/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | 96.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |



VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 92% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 94% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-16-27 | | |
| Lab Sample ID: | MC16587-2 | Date Sampled: | 12/04/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 96.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19748.D | 1 | 12/10/12 | AP | 12/10/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.4 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0025 | 0.0011 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0025 | 0.00098 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 72% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 73% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-16-37 | | |
| Lab Sample ID: | MC16587-3 | Date Sampled: | 12/04/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | 96.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | G122740.D | 1 | 12/10/12 | JM | n/a | n/a | MSG4879 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 9.89 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.27 | 0.069 | mg/kg | |
| 107-02-8 | Acrolein | ND | 1.4 | 0.54 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 1.4 | 0.068 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.027 | 0.016 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.27 | 0.012 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.27 | 0.020 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.11 | 0.011 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.11 | 0.11 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.11 | 0.028 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.27 | 0.068 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.27 | 0.010 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.27 | 0.013 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.27 | 0.048 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.27 | 0.0089 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.11 | 0.040 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.11 | 0.015 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.27 | 0.068 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.27 | 0.11 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.11 | 0.028 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.27 | 0.025 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.27 | 0.060 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.27 | 0.012 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.11 | 0.016 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.11 | 0.012 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.11 | 0.012 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.11 | 0.011 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.11 | 0.062 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.11 | 0.015 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.11 | 0.016 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.11 | 0.020 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.11 | 0.016 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.11 | 0.016 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-16-37 | | |
| Lab Sample ID: | MC16587-3 | Date Sampled: | 12/04/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | 96.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.11 | 0.020 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.27 | 0.013 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.27 | 0.047 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.27 | 0.014 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.11 | 0.0093 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.11 | 0.027 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1.4 | 1.4 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.27 | 0.037 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.11 | 0.013 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.27 | 0.025 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.27 | 0.027 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.27 | 0.012 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.27 | 0.0097 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.11 | 0.016 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.27 | 0.027 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.27 | 0.027 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.11 | 0.063 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.27 | 0.068 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.27 | 0.055 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.27 | 0.013 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.27 | 0.054 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.11 | 0.023 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.11 | 0.012 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.27 | 0.046 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.27 | 0.013 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.27 | 0.012 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.11 | 0.017 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.11 | 0.040 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.11 | 0.012 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.11 | 0.017 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.27 | 0.016 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 0.0197 | 0.27 | 0.012 | mg/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 0.0131 | 0.27 | 0.012 | mg/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 0.27 | 0.030 | mg/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 0.11 | 0.015 | mg/kg | |
| | m,p-Xylene | ND | 0.11 | 0.043 | mg/kg | |
| 95-47-6 | o-Xylene | 0.0157 | 0.11 | 0.013 | mg/kg | J |
| 1330-20-7 | Xylene (total) | 0.0454 | 0.11 | 0.013 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-16-37 | | |
| Lab Sample ID: | MC16587-3 | Date Sampled: | 12/04/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | 96.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 93% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 93% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-16-37 | | |
| Lab Sample ID: | MC16587-3 | Date Sampled: | 12/04/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 96.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19751.D | 1 | 12/10/12 | AP | 12/10/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.1 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.0010 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 112% | | 61-167% |
| 460-00-4 | Bromoflnorobenzene (S) | 124% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16587-4 | Date Sampled: | 12/04/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | N71222.D | 1 | 12/18/12 | JP | n/a | n/a | MSN2676 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 3.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.2 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.24 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.62 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.3 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.58 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.78 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.4 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.61 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.55 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.64 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.61 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.87 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.47 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.50 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 1.3 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.50 | ng/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.73 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.65 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.48 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.53 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.93 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.45 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.64 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.7 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.62 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.41 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.95 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16587-4 | Date Sampled: | 12/04/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.72 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.64 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 1.6 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.91 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.45 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.20 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 15 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.81 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.51 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 2.1 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.50 | ug/l | |
| 99-87-6 | p-Isopropyltolnene | ND | 5.0 | 0.57 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.41 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 2.9 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.1 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.83 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.58 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.45 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.57 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.60 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.42 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.51 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.85 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.50 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.78 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.29 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.85 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.35 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.47 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.3 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.63 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.73 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.58 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.58 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presnmptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16587-4 | Date Sampled: | 12/04/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 97% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 102% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 120% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16587-4 | Date Sampled: | 12/04/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/06/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19945.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 36.0 ml | 2.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.015 | 0.013 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.015 | 0.010 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 111% | | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 95% | | 36-173% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-20-11 | | |
| Lab Sample ID: | MC16587-5 | Date Sampled: | 12/05/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | 88.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | G122785.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.24 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.57 | 0.14 | mg/kg | |
| 107-02-8 | Acrolein | ND | 2.9 | 1.1 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 2.9 | 0.14 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.057 | 0.034 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.57 | 0.026 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.57 | 0.043 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.23 | 0.024 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.23 | 0.23 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.23 | 0.060 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.57 | 0.14 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.57 | 0.021 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.57 | 0.026 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.57 | 0.10 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.57 | 0.019 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.23 | 0.083 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.23 | 0.032 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.57 | 0.14 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.57 | 0.23 | mg/kg | UJ |
| 67-66-3 | Chloroform | ND | 0.23 | 0.059 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.57 | 0.053 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.57 | 0.13 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.57 | 0.026 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.23 | 0.034 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.23 | 0.025 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.23 | 0.026 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.23 | 0.024 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.23 | 0.13 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.23 | 0.031 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.23 | 0.033 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.23 | 0.042 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.23 | 0.035 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.23 | 0.033 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-20-11 | | |
| Lab Sample ID: | MC16587-5 | Date Sampled: | 12/05/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | 88.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.23 | 0.043 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.57 | 0.027 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.57 | 0.099 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.57 | 0.030 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.23 | 0.020 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.23 | 0.057 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 2.9 | 2.9 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.57 | 0.078 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0367 | 0.23 | 0.028 | mg/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 0.57 | 0.053 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.57 | 0.057 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.57 | 0.026 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.57 | 0.020 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.23 | 0.033 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.57 | 0.057 | mg/kg | UJ |
| 74-95-3 | Methylene bromide | ND | 0.57 | 0.057 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.23 | 0.13 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.57 | 0.14 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.57 | 0.12 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.57 | 0.027 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.57 | 0.11 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.23 | 0.049 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.23 | 0.026 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.57 | 0.097 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.57 | 0.027 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.57 | 0.026 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.23 | 0.036 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.23 | 0.084 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.23 | 0.024 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.23 | 0.035 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.57 | 0.034 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.57 | 0.026 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.57 | 0.025 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.57 | 0.064 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.23 | 0.031 | mg/kg | |
| | m,p-Xylene | ND | 0.23 | 0.090 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.23 | 0.027 | mg/kg | |
| 1330-20-7 | Xylene (total) | 0.0803 | 0.23 | 0.027 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-20-11 | | |
| Lab Sample ID: | MC16587-5 | Date Sampled: | 12/05/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | 88.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 90% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 90% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-20-11 | | |
| Lab Sample ID: | MC16587-5 | Date Sampled: | 12/05/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 88.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19752.D | 1 | 12/10/12 | AP | 12/10/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.7 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0028 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0028 | 0.0011 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 96% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 104% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-20-21 | | |
| Lab Sample ID: | MC16587-6 | Date Sampled: | 12/05/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | 81.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | G122786.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.50 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.62 | 0.16 | mg/kg | |
| 107-02-8 | Acrolein | ND | 3.1 | 1.2 | mg/kg | NJ |
| 107-13-1 | Acrylonitrile | ND | 3.1 | 0.15 | mg/kg | |
| 71-43-2 | Benzene | 0.0585 | 0.062 | 0.036 | mg/kg | J |
| 108-86-1 | Bromobenzene | ND | 0.62 | 0.028 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.62 | 0.046 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.25 | 0.026 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.25 | 0.25 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.25 | 0.064 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.62 | 0.15 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.62 | 0.023 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | 0.365 | 0.62 | 0.028 | mg/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 0.62 | 0.11 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.62 | 0.020 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.25 | 0.090 | mg/kg | |
| 108-90-7 | Chlorobenzene | 0.0401 | 0.25 | 0.034 | mg/kg | J |
| 75-00-3 | Chloroethane | ND | 0.62 | 0.16 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.62 | 0.25 | mg/kg | NJ |
| 67-66-3 | Chloroform | ND | 0.25 | 0.064 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.62 | 0.057 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.62 | 0.14 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.62 | 0.028 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.25 | 0.037 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.25 | 0.027 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.25 | 0.028 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.25 | 0.026 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.25 | 0.14 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.25 | 0.033 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.25 | 0.036 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.25 | 0.045 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.25 | 0.037 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.25 | 0.035 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | MW-20-21 | | |
| Lab Sample ID: | MC16587-6 | Date Sampled: | 12/05/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | 81.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

4.6

4

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.25 | 0.046 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.62 | 0.029 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.62 | 0.11 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.62 | 0.033 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.25 | 0.021 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.25 | 0.061 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 3.1 | 3.1 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.62 | 0.084 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.25 | 0.030 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.62 | 0.058 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.62 | 0.062 | mg/kg | |
| 98-82-8 | Isopropylbenzene | 0.110 | 0.62 | 0.028 | mg/kg | J |
| 99-87-6 | p-Isopropyltoluene | 0.0854 | 0.62 | 0.022 | mg/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.25 | 0.036 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.62 | 0.062 | mg/kg | UJ |
| 74-95-3 | Methylene bromide | ND | 0.62 | 0.061 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.25 | 0.14 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.62 | 0.15 | mg/kg | |
| 103-65-1 | n-Propylbenzene | 0.178 | 0.62 | 0.13 | mg/kg | J |
| 100-42-5 | Styrene | ND | 0.62 | 0.029 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.62 | 0.12 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.25 | 0.053 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.25 | 0.028 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.62 | 0.11 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.62 | 0.029 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.62 | 0.028 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.25 | 0.039 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.25 | 0.091 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.25 | 0.026 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.25 | 0.038 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.62 | 0.036 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.62 | 0.028 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.62 | 0.026 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.62 | 0.069 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.25 | 0.034 | mg/kg | |
| | m,p-Xylene | ND | 0.25 | 0.098 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.25 | 0.030 | mg/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.25 | 0.030 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a componnd

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-20-21 | | |
| Lab Sample ID: | MC16587-6 | Date Sampled: | 12/05/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | 81.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 93% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-20-21 | | |
| Lab Sample ID: | MC16587-6 | Date Sampled: | 12/05/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 81.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19750.D | 1 | 12/10/12 | AP | 12/10/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.1 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0031 | 0.0014 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0031 | 0.0012 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 103% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 101% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-20-41 | | |
| Lab Sample ID: | MC16587-7 | Date Sampled: | 12/05/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | 97.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | G122787.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.55 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.57 | 0.14 | mg/kg | |
| 107-02-8 | Acrolein | ND | 2.9 | 1.1 | mg/kg | uJ |
| 107-13-1 | Acrylonitrile | ND | 2.9 | 0.14 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.057 | 0.034 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.57 | 0.026 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.57 | 0.043 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.23 | 0.024 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.23 | 0.23 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.23 | 0.060 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.57 | 0.14 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.57 | 0.021 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.57 | 0.026 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.57 | 0.10 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.57 | 0.019 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.23 | 0.083 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.23 | 0.032 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.57 | 0.14 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.57 | 0.23 | mg/kg | uJ |
| 67-66-3 | Chloroform | ND | 0.23 | 0.059 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.57 | 0.053 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.57 | 0.13 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.57 | 0.026 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.23 | 0.034 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.23 | 0.025 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.23 | 0.026 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.23 | 0.024 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.23 | 0.13 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.23 | 0.031 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.23 | 0.033 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.23 | 0.042 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.23 | 0.035 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.23 | 0.033 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-20-41 | | |
| Lab Sample ID: | MC16587-7 | Date Sampled: | 12/05/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | 97.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Spceial List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.23 | 0.043 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.57 | 0.026 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.57 | 0.099 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.57 | 0.030 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.23 | 0.020 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.23 | 0.057 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 2.9 | 2.9 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.57 | 0.078 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0345 | 0.23 | 0.028 | mg/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 0.57 | 0.053 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.57 | 0.057 | mg/kg | |
| 98-82-8 | Isopropylbenzene | 0.0314 | 0.57 | 0.026 | mg/kg | J |
| 99-87-6 | p-Isopropyltoluene | ND | 0.57 | 0.020 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.23 | 0.033 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.57 | 0.057 | mg/kg | UCJ |
| 74-95-3 | Methylene bromide | ND | 0.57 | 0.057 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.23 | 0.13 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.57 | 0.14 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.57 | 0.12 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.57 | 0.027 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.57 | 0.11 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.23 | 0.049 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.23 | 0.026 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.57 | 0.097 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.57 | 0.027 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.57 | 0.026 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.23 | 0.036 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.23 | 0.084 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.23 | 0.024 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.23 | 0.035 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.57 | 0.034 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.57 | 0.026 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.57 | 0.025 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.57 | 0.064 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.23 | 0.031 | mg/kg | |
| | m,p-Xylene | ND | 0.23 | 0.090 | mg/kg | |
| 95-47-6 | o-Xylene | 0.0398 | 0.23 | 0.027 | mg/kg | J |
| 1330-20-7 | Xylene (total) | 0.0398 | 0.23 | 0.027 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-20-41 | | |
| Lab Sample ID: | MC16587-7 | Date Sampled: | 12/05/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8260B | Percent Solids: | 97.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 94% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 93% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-20-41 | | |
| Lab Sample ID: | MC16587-7 | Date Sampled: | 12/05/12 |
| Matrix: | SO - Soil | Date Received: | 12/06/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 97.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19753.D | 1 | 12/10/12 | AP | 12/10/12 | OP31352 | GBK712 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.3 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0011 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.00098 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 117% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 118% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES



## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

ACCUTEST LABORATORIES

# CHAIN OF CUSTODY

Accutest Laboratories of New England
495 Technology Center West, Building One
TEL. 508-481-6200 FAX: 508-481-7753
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking # | Bottle Order Control #
Accutest Quote # | Accutest Job # MC16587

**Client / Reporting Information**

Company Name: URS
Street Address:
City State Zip:
Project Contact: E. Kunkel | E-mail:
Phone #: | Fax #:
Sampler(s) Name(s): W. Pennington, J. Streifler | Phone #:

**Project Information**

Project Name: Roxana Drilling
Street:
City: Roxana, IL
Project #: 21562735.00015
Client PO#:
Project Manager: D. Palmer

**Billing Information (If different from Report to)**

Company Name: URS
Street Address:
City State Zip:
Attention: PO#:

**Requested Analysis (see TEST CODE sheet)**

| Accutest Sample # | Field ID / Point of Collection | MEOH Vial # | Collection Date | Collection Time | Sampled by | Matrix | # of bottles | Number of preserved Bottles: HCl | NaOH | HNO3 | H2SO4 | NONE | DI Water | MEOH | ENCORE | Sodium Bisulfate | VOC 8260 | VOC 8011 | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | MW-16-14 | | 12/4/12 | 1440 | WP/JS | SO | 4 | | | | | X | | X | | X | X | X | |
| -2 | MW-16-27 | | | 1450 | | | | | | | | X | | X | | X | X | X | |
| -3 | MW-16-37 | | | 1455 | | | | | | | | X | | X | | X | X | X | |
| -4 | Trip Blank | | | | | | 4 | | | | | | | | | X | X | | |
| -5 | MW-20-11 | | 12/5/12 | 1325 | WP/JS | SO | 4 | | | | | X | | X | | X | X | X | |
| -6 | MW-20-21 | | | 1335 | | | | | | | | X | | X | | X | X | X | |
| -7 | MW-20-41 | | | 1340 | | | | | | | | X | | X | | X | X | X | |
| | | | | | | | | | | | | | | | | | | | 10H63E |
| | | | | | | | | | | | | | | | | | | | 3D4 |

**Turnaround Time (Business days)**
- [X] Std. 10 Business Days
- [ ] Std. 5 Business Days (By Contract only)
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Labtink

Approved By (Accutest PM) / Date:

**Data Deliverable Information**
- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [X] FULLT1 (Level 3+4)
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [X] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

**Comments / Special Instructions**

Sample Custody must be documented below each time samples change possession, including courier delivery.

| | Relinquished by Sampler | Date Time | Received By | Relinquished By | Date Time | Received By |
|---|---|---|---|---|---|---|
| 1 | W. Pennington | 12/5/12 1500 | Fed Ex | FEDX | 12-6-12 930 | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |

Custody Seal # | [ ] Intact [ ] Not Intact | Preserved where applicable [ ] | On Ice [X] | Cooler Temp. 0.6

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**MC16587: Chain of Custody**
**Page 1 of 3**

ACCUTEST LABORATORIES

# Accutest Laboratories Sample Receipt Summary

**Accutest Job Number:** MC16587 **Client:** URS **Immediate Client Services Action Required:** Yes

**Date / Time Received:** 12/6/2012 9:30 **Delivery Method:** Accutest Courier

**Project:** ROXANA DRILLING **No. Coolers:** 1 **Airbill #'s:**

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2. Custody Seals Intact: | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification: | Infared gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservation | Y | N | N/A |
|---|---|---|---|
| 1. Trip Blank present / cooler: | ☑ | ☐ | |
| 2. Trip Blank listed on COC: | ☑ | ☐ | |
| 3. Samples preserved properly: | ☑ | ☐ | |
| 4. VOCs headspace free: | ☑ | ☐ | ☑ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles: | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree: | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1. Sample rec'd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3. Condition of sample: | Broken / Leaking |

| Sample Integrity - Instructions | Y | N | N/A |
|---|---|---|---|
| 1. Analysis requested is clear: | ☑ | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | ☑ | |
| 3. Sufficient volume rec'd for analysis: | ☑ | ☐ | |
| 4. Compositing instructions clear. | ☐ | ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ | ☐ | ☑ |

Comments

-3 MEOH vial was received without any MEOH inside.

Accutest Laboratories
V 508 481 6200

495 Technology Center West, Bldg One
F 508.481.7753

Marlborough, MA
www.accutest.com

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5

**MC16587: Chain of Custody**
**Page 2 of 3**

ACCUTEST

## Sample Receipt Summary - Problem Resolution

**Accutest Job Number:** MC16587

**CSR:** Jeremy Vienneau **Response Date:** 12/10/2012

**Response:** Client was notified and an aliquot was made from intact soil. See phone log.

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Accutest Laboratories
V. 508.481.6200

495 Technology Center West, Bldg One
F. 508.481.7753

Marlborough, MA
www.accutest.com

**MC16587: Chain of Custody**
**Page 3 of 3**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC16587

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562735.00015



| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC16587-1 Collected: 04-DEC-12 14:40 By: WPJS Received: 06-DEC-12 By: MW-16-14 | | | | | | |
| MC16587-1 | SM21 2540 B MOD. | 07-DEC-12 | CF | | | %SOL |
| MC16587-1 | SW846 8011 | 10-DEC-12 04:01 | AP | 10-DEC-12 | NK | V8011SL |
| MC16587-1 | SW846 8260B | 10-DEC-12 16:51 | JM | | | V8260SL+ |
| MC16587-2 Collected: 04-DEC-12 14:50 By: WPJS Received: 06-DEC-12 By: MW-16-27 | | | | | | |
| MC16587-2 | SM21 2540 B MOD. | 07-DEC-12 | CF | | | %SOL |
| MC16587-2 | SW846 8011 | 10-DEC-12 04:25 | AP | 10-DEC-12 | NK | V8011SL |
| MC16587-2 | SW846 8260B | 10-DEC-12 17:20 | JM | | | V8260SL+ |
| MC16587-3 Collected: 04-DEC-12 14:55 By: WPJS Received: 06-DEC-12 By: MW-16-37 | | | | | | |
| MC16587-3 | SM21 2540 B MOD. | 07-DEC-12 | CF | | | %SOL |
| MC16587-3 | SW846 8011 | 10-DEC-12 05:39 | AP | 10-DEC-12 | NK | V8011SL |
| MC16587-3 | SW846 8260B | 10-DEC-12 17:49 | JM | | | V8260SL+ |
| MC16587-4 Collected: 04-DEC-12 00:00 By: WPJS Received: 06-DEC-12 By: TRIP BLANK | | | | | | |
| MC16587-4 | SW846 8011 | 13-DEC-12 23:19 | AP | 13-DEC-12 | BJ | V8011SL |
| MC16587-4 | SW846 8260B | 18-DEC-12 08:22 | JP | | | V8260SL+ |
| MC16587-5 Collected: 05-DEC-12 13:25 By: WPJS Received: 06-DEC-12 By: MW-20-11 | | | | | | |
| MC16587-5 | SM21 2540 B MOD. | 07-DEC-12 | CF | | | %SOL |
| MC16587-5 | SW846 8011 | 10-DEC-12 06:04 | AP | 10-DEC-12 | NK | V8011SL |
| MC16587-5 | SW846 8260B | 11-DEC-12 18:43 | JM | | | V8260SL+ |
| MC16587-6 Collected: 05-DEC-12 13:35 By: WPJS Received: 06-DEC-12 By: MW-20-21 | | | | | | |
| MC16587-6 | SM21 2540 B MOD. | 07-DEC-12 | CF | | | %SOL |
| MC16587-6 | SW846 8011 | 10-DEC-12 05:14 | AP | 10-DEC-12 | NK | V8011SL |
| MC16587-6 | SW846 8260B | 11-DEC-12 19:12 | JM | | | V8260SL+ |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC16587

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562735.00015



| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC16587-7 Collected: 05-DEC-12 13:40 By: WPJS Received: 06-DEC-12 By: MW-20-41 | | | | | | |
| MC16587-7 | SM21 2540 B MOD. | 07-DEC-12 | CF | | | %SOL |
| MC16587-7 | SW846 8011 | 10-DEC-12 06:28 | AP | 10-DEC-12 | NK | V8011SL |
| MC16587-7 | SW846 8260B | 11-DEC-12 19:41 | JM | | | V8260SL+ |

# Accutest Internal Chain of Custody



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 12/06/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16587-1.1 | Walk In Ref #5 | Crystall Woodruff | 12/07/12 16:36 | Retrieve from Storage |
| MC16587-1.1 | Crystall Woodruff | Walk In Ref #5 | 12/07/12 18:14 | Return to Storage |
| MC16587-1.1 | Walk In Ref #5 | Chris Cataldo | 12/08/12 10:32 | Retrieve from Storage |
| MC16587-1.1 | Chris Cataldo | Walk In Ref #5 | 12/08/12 21:08 | Return to Storage |
| MC16587-1.1 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16587-1.4 | VOC Ref #10 | Jaime Maslowski | 12/10/12 10:33 | Retrieve from Storage |
| MC16587-1.4 | Jaime Maslowski | VOC Ref #10 | 12/11/12 09:55 | Return to Storage |
| MC16587-1.4 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16587-2.1 | Walk In Ref #5 | Crystall Woodruff | 12/07/12 16:36 | Retrieve from Storage |
| MC16587-2.1 | Crystall Woodruff | Walk In Ref #5 | 12/07/12 18:14 | Return to Storage |
| MC16587-2.1 | Walk In Ref #5 | Chris Cataldo | 12/08/12 10:32 | Retrieve from Storage |
| MC16587-2.1 | Chris Cataldo | Walk In Ref #5 | 12/08/12 21:08 | Return to Storage |
| MC16587-2.1 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16587-2.4 | VOC Ref #10 | Jaime Maslowski | 12/10/12 10:33 | Retrieve from Storage |
| MC16587-2.4 | Jaime Maslowski | VOC Ref #10 | 12/11/12 09:55 | Return to Storage |
| MC16587-2.4 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16587-3.1 | Walk In Ref #5 | Crystall Woodruff | 12/07/12 16:36 | Retrieve from Storage |
| MC16587-3.1 | Crystall Woodruff | Walk In Ref #5 | 12/07/12 18:14 | Return to Storage |
| MC16587-3.1 | Walk In Ref #5 | Chris Cataldo | 12/08/12 10:32 | Retrieve from Storage |
| MC16587-3.1 | Chris Cataldo | Walk In Ref #5 | 12/08/12 21:08 | Return to Storage |
| MC16587-3.1 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16587-3.4 | VOC Ref #10 | Jaime Maslowski | 12/10/12 10:33 | Retrieve from Storage |
| MC16587-3.4 | Jaime Maslowski | VOC Ref #10 | 12/11/12 09:55 | Return to Storage |
| MC16587-3.4 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16587-4.1 | VOC Ref #3 | Amy Min Yang | 12/18/12 07:55 | Retrieve from Storage |
| MC16587-4.1 | Amy Min Yang | GCMSN | 12/18/12 07:56 | Load on Instrument |
| MC16587-4.1 | GCMSN | Jugal Patel | 12/18/12 16:56 | Unload from Instrument |
| MC16587-4.1 | Jugal Patel | VOC Ref #3 | 12/18/12 16:57 | Return to Storage |
| MC16587-4.1 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16587-4.3 | VOC Ref #3 | Bijan Jafari | 12/13/12 04:40 | Retrieve from Storage |
| MC16587-4.3 | Bijan Jafari | | 12/14/12 17:43 | Depleted |
| MC16587-5.1 | Walk In Ref #5 | Crystall Woodruff | 12/07/12 16:36 | Retrieve from Storage |
| MC16587-5.1 | Crystall Woodruff | Walk In Ref #5 | 12/07/12 18:14 | Return to Storage |
| MC16587-5.1 | Walk In Ref #5 | Chris Cataldo | 12/08/12 10:32 | Retrieve from Storage |
| MC16587-5.1 | Chris Cataldo | Walk In Ref #5 | 12/08/12 21:08 | Return to Storage |
| MC16587-5.1 | Scott Parsick | | 02/13/13 11:50 | Disposed |

5.3

# Accutest Internal Chain of Custody



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 12/06/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16587-5.4 | VOC Ref #10 | Jaime Maslowski | 12/11/12 14:32 | Retrieve from Storage |
| MC16587-5.4 | Jaime Maslowski | VOC Ref #10 | 12/12/12 10:08 | Return to Storage |
| MC16587-5.4 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16587-6.1 | Walk In Ref #5 | Crystall Woodruff | 12/07/12 16:36 | Retrieve from Storage |
| MC16587-6.1 | Crystall Woodruff | Walk In Ref #5 | 12/07/12 18:14 | Return to Storage |
| MC16587-6.1 | Walk In Ref #5 | Chris Cataldo | 12/08/12 10:32 | Retrieve from Storage |
| MC16587-6.1 | Chris Cataldo | Walk In Ref #5 | 12/08/12 21:08 | Return to Storage |
| MC16587-6.1 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16587-6.4 | VOC Ref #10 | Jaime Maslowski | 12/11/12 14:32 | Retrieve from Storage |
| MC16587-6.4 | Jaime Maslowski | VOC Ref #10 | 12/12/12 10:08 | Return to Storage |
| MC16587-6.4 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16587-7.1 | Walk In Ref #5 | Crystall Woodruff | 12/07/12 16:36 | Retrieve from Storage |
| MC16587-7.1 | Crystall Woodruff | Walk In Ref #5 | 12/07/12 18:14 | Return to Storage |
| MC16587-7.1 | Walk In Ref #5 | Chris Cataldo | 12/08/12 10:33 | Retrieve from Storage |
| MC16587-7.1 | Chris Cataldo | Walk In Ref #5 | 12/08/12 21:08 | Return to Storage |
| MC16587-7.1 | Scott Parsick | | 02/13/13 11:50 | Disposed |
| MC16587-7.4 | VOC Ref #10 | Jaime Maslowski | 12/11/12 14:32 | Retrieve from Storage |
| MC16587-7.4 | Jaime Maslowski | VOC Ref #10 | 12/12/12 10:08 | Return to Storage |
| MC16587-7.4 | Scott Parsick | | 02/13/13 11:50 | Disposed |

New England ACCUTEST LABORATORIES

## GC/MS Volatiles



## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4879-MB | G122725.D | 1 | 12/10/12 | JM | n/a | n/a | MSG4879 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-1, MC16587-2, MC16587-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 63 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 500 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 1300 | 63 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 11 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 19 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 11 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 100 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 26 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 63 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 9.2 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 11 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 44 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 8.2 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 36 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 14 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 63 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 100 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 26 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 23 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 55 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 11 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 15 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 57 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 14 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 14 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 18 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 15 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 14 | ng/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 19 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 12 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 43 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 13 | ug/kg | |

# Method Blank Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4879-MB | G122725.D | 1 | 12/10/12 | JM | n/a | n/a | MSG4879 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-1, MC16587-2, MC16587-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 8.5 | ng/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 25 | ng/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 34 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 12 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 23 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 25 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 11 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.9 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 14 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 25 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 25 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 58 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 63 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 51 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 12 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 21 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 11 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 42 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 12 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 11 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 16 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 37 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 11 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 15 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 15 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 11 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 11 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 28 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 14 | ug/kg | |
| | m,p-Xylene | ND | 100 | 39 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 12 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 12 | ug/kg | |

# Method Blank Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4879-MB | G122725.D | 1 | 12/10/12 | JM | n/a | n/a | MSG4879 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-1, MC16587-2, MC16587-3

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 133%* [a] | 70-130% |
| 2037-26-5 | Toluene-D8 | 122% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 123% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/kg | |

(a) Outside control limits. Associated target analytes are non-detect.

# Method Blank Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4880-MB | G122775.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-5, MC16587-6, MC16587-7

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 63 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 500 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 1300 | 63 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 11 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 19 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 11 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 100 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 26 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 63 | ug/kg | |
| 104-51-8 | u-Butylbenzene | ND | 250 | 9.2 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 11 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 44 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 8.2 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 36 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 14 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 63 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 100 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 26 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 23 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 55 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 11 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 15 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 57 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 14 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 14 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 18 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 15 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 19 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 12 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 43 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 13 | ug/kg | |

# Method Blank Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4880-MB | G122775.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-5, MC16587-6, MC16587-7

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 8.5 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 25 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 34 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 12 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 23 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 25 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 11 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.9 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 14 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 25 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 25 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 58 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 63 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 51 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 12 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 21 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 11 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 42 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 12 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 11 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 16 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 37 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 11 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 15 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 15 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 11 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 11 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 28 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 14 | ug/kg | |
| | m,p-Xylene | ND | 100 | 39 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 12 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 12 | ug/kg | |

# Method Blank Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4880-MB | G122775.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-5, MC16587-6, MC16587-7

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 111% | 70-130% |
| 2037-26-5 | Toluene-D8 | 103% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/kg | |

# Method Blank Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2676-MB | N71221.D | 1 | 12/18/12 | JP | n/a | n/a | MSN2676 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 3.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.2 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.24 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.62 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.3 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.58 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.78 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.4 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.61 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.55 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.64 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.61 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.87 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.47 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.50 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 1.3 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.50 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.73 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.65 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.48 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.53 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.93 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.45 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.64 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.7 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.62 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.41 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.95 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.72 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.64 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 1.6 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.91 | ug/l | |

# Method Blank Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2676-MB | N71221.D | 1 | 12/18/12 | JP | n/a | n/a | MSN2676 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.45 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.20 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 15 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.81 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.51 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 2.1 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.50 | ng/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.57 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.41 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 2.9 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.1 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.83 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.58 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.45 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.57 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.60 | ug/l | |
| 127-18-4 | Tetrachloroetheue | ND | 1.0 | 0.42 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.51 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.85 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.50 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.78 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.29 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.85 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.35 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.47 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.3 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.63 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.73 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.58 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.58 | ug/l | |

# Method Blank Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2676-MB | N71221.D | 1 | 12/18/12 | JP | n/a | n/a | MSN2676 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-4

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 102% | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 116% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

# Blank Spike Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4879-BS | G122722.D | 1 | 12/10/12 | JM | n/a | n/a | MSG4879 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-1, MC16587-2, MC16587-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 3200 | 128 | 70-130 |
| 107-02-8 | Acrolein | 12500 | 4350 | 35* a | 70-130 |
| 107-13-1 | Acrylonitrile | 2500 | 2650 | 106 | 70-130 |
| 71-43-2 | Benzene | 2500 | 2970 | 119 | 70-130 |
| 108-86-1 | Bromobenzene | 2500 | 2630 | 105 | 70-130 |
| 74-97-5 | Bromochloromethane | 2500 | 2970 | 119 | 70-130 |
| 75-27-4 | Bromodichloromethane | 2500 | 2610 | 104 | 70-130 |
| 75-25-2 | Bromoform | 2500 | 2030 | 81 | 70-130 |
| 74-83-9 | Bromomethane | 2500 | 3020 | 121 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 3060 | 122 | 70-130 |
| 104-51-8 | n-Butylbenzene | 2500 | 2870 | 115 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 2500 | 3090 | 124 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 2500 | 3230 | 129 | 70-130 |
| 75-15-0 | Carbon disulfide | 2500 | 3620 | 145* a | 70-130 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2600 | 104 | 70-130 |
| 108-90-7 | Chlorobenzene | 2500 | 2900 | 116 | 70-130 |
| 75-00-3 | Chloroethane | 2500 | 3240 | 130 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 1050 | 42 | 10-160 |
| 67-66-3 | Chloroform | 2500 | 3070 | 123 | 70-130 |
| 74-87-3 | Chloromethane | 2500 | 3790 | 152* a | 70-130 |
| 95-49-8 | o-Chlorotoluene | 2500 | 3050 | 122 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 2500 | 3180 | 127 | 70-130 |
| 124-48-1 | Dibromochloromethane | 2500 | 2300 | 92 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2900 | 116 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2920 | 117 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2750 | 110 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 2500 | 100 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 3420 | 137* a | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2530 | 101 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 3220 | 129 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 3260 | 130 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 3150 | 126 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2930 | 117 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2560 | 102 | 70-130 |
| 594-20-7 | 2,2-Dichloropropane | 2500 | 3520 | 141* a | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2950 | 118 | 70-130 |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4879-BS | G122722.D | 1 | 12/10/12 | JM | n/a | n/a | MSG4879 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-1, MC16587-2, MC16587-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2700 | 108 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2720 | 109 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 12500 | 11900 | 95 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2490 | 100 | 76-141 |
| 100-41-4 | Ethylbenzene | 2500 | 2760 | 110 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2640 | 106 | 70-130 |
| 591-78-6 | 2-Hexanone | 2500 | 2410 | 96 | 70-130 |
| 98-82-8 | Isopropylbenzene | 2500 | 3130 | 125 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2930 | 117 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2930 | 117 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 1800 | 72 | 70-130 |
| 74-95-3 | Methylene bromide | 2500 | 2550 | 102 | 70-130 |
| 75-09-2 | Methylene chloride | 2500 | 3300 | 132* a | 70-130 |
| 91-20-3 | Naphthalene | 2500 | 3160 | 126 | 70-130 |
| 103-65-1 | n-Propylbenzene | 2500 | 3130 | 125 | 70-130 |
| 100-42-5 | Styrene | 2500 | 2600 | 104 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2420 | 97 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2720 | 109 | 70-130 |
| 127-18-4 | Tetrachloroethene | 2500 | 2570 | 103 | 70-130 |
| 108-88-3 | Toluene | 2500 | 2950 | 118 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 3300 | 132* a | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2840 | 114 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 3210 | 128 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2620 | 105 | 70-130 |
| 79-01-6 | Trichloroethene | 2500 | 2810 | 112 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 3030 | 121 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2620 | 105 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2780 | 111 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2780 | 111 | 70-130 |
| 108-05-4 | Vinyl Acetate | 2500 | 3040 | 122 | 70-130 |
| 75-01-4 | Vinyl chloride | 2500 | 3210 | 128 | 70-130 |
| | m,p-Xylene | 5000 | 5680 | 114 | 70-130 |
| 95-47-6 | o-Xylene | 2500 | 2900 | 116 | 70-130 |
| 1330-20-7 | Xylene (total) | 7500 | 8580 | 114 | 70-130 |

* = Outside of Control Limits.

6.2.1

# Blank Spike Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4879-BS | G122722.D | 1 | 12/10/12 | JM | n/a | n/a | MSG4879 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-1, MC16587-2, MC16587-3

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 128% | 70-130% |
| 2037-26-5 | Toluene-D8 | 117% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 117% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4880-BS | G122773.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-5, MC16587-6, MC16587-7

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 2390 | 96 | 70-130 |
| 107-02-8 | Acrolein | 12500 | 5000 | 40* a | 70-130 |
| 107-13-1 | Acrylonitrile | 2500 | 2510 | 100 | 70-130 |
| 71-43-2 | Benzene | 2500 | 2620 | 105 | 70-130 |
| 108-86-1 | Bromobenzene | 2500 | 2350 | 94 | 70-130 |
| 74-97-5 | Bromochloromethane | 2500 | 2620 | 105 | 70-130 |
| 75-27-4 | Bromodichloromethane | 2500 | 2310 | 92 | 70-130 |
| 75-25-2 | Bromoform | 2500 | 1840 | 74 | 70-130 |
| 74-83-9 | Bromomethane | 2500 | 2590 | 104 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 2610 | 104 | 70-130 |
| 104-51-8 | n-Butylbenzene | 2500 | 2490 | 100 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2690 | 108 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2820 | 113 | 70-130 |
| 75-15-0 | Carbon disulfide | 2500 | 3120 | 125 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2240 | 90 | 70-130 |
| 108-90-7 | Chlorobenzene | 2500 | 2550 | 102 | 70-130 |
| 75-00-3 | Chloroethane | 2500 | 2830 | 113 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 890 | 36 | 10-160 |
| 67-66-3 | Chloroform | 2500 | 2700 | 108 | 70-130 |
| 74-87-3 | Chloromethane | 2500 | 3260 | 130 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2670 | 107 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2780 | 111 | 70-130 |
| 124-48-1 | Dibromochloromethane | 2500 | 2060 | 82 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2580 | 103 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2570 | 103 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2410 | 96 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 2050 | 82 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2990 | 120 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2290 | 92 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2820 | 113 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2840 | 114 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2740 | 110 | 70-130 |
| 78-87-5 | 1,2-Dichloropropaue | 2500 | 2590 | 104 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2320 | 93 | 70-130 |
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2940 | 118 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2570 | 103 | 70-130 |

* = Outside of Control Limits.

6.2.2

# Blank Spike Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4880-BS | G122773.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-5, MC16587-6, MC16587-7

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2400 | 96 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2400 | 96 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 12500 | 11300 | 90 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2290 | 92 | 76-141 |
| 100-41-4 | Ethylbenzene | 2500 | 2430 | 97 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2320 | 93 | 70-130 |
| 591-78-6 | 2-Hexanone | 2500 | 2010 | 80 | 70-130 |
| 98-82-8 | Isopropylbenzene | 2500 | 2730 | 109 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2550 | 102 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2660 | 106 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 1640 | 66* a | 70-130 |
| 74-95-3 | Methylene bromide | 2500 | 2330 | 93 | 70-130 |
| 75-09-2 | Methylene chloride | 2500 | 2880 | 115 | 70-130 |
| 91-20-3 | Naphthalene | 2500 | 2870 | 115 | 70-130 |
| 103-65-1 | n-Propylbenzene | 2500 | 2730 | 109 | 70-130 |
| 100-42-5 | Styrene | 2500 | 2280 | 91 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2140 | 86 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2530 | 101 | 70-130 |
| 127-18-4 | Tetrachloroethene | 2500 | 2250 | 90 | 70-130 |
| 108-88-3 | Toluene | 2500 | 2560 | 102 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 2960 | 118 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2530 | 101 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2740 | 110 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2360 | 94 | 70-130 |
| 79-01-6 | Trichloroethene | 2500 | 2450 | 98 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2670 | 107 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2480 | 99 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2430 | 97 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2420 | 97 | 70-130 |
| 108-05-4 | Vinyl Acetate | 2500 | 2790 | 112 | 70-130 |
| 75-01-4 | Vinyl chloride | 2500 | 2850 | 114 | 70-130 |
| | m,p-Xylene | 5000 | 4980 | 100 | 70-130 |
| 95-47-6 | o-Xylene | 2500 | 2540 | 102 | 70-130 |
| 1330-20-7 | Xylene (total) | 7500 | 7530 | 100 | 70-130 |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4880-BS | G122773.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-5, MC16587-6, MC16587-7

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 109% | 70-130% |
| 2037-26-5 | Toluene-D8 | 100% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.



* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2676-BS | N71219.D | 1 | 12/18/12 | JP | n/a | n/a | MSN2676 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-4

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 51.2 | 102 | 70-130 |
| 107-02-8 | Acrolein | 250 | 140 | 56* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 236 | 472* b | 70-130 |
| 71-43-2 | Benzene | 50 | 51.3 | 103 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 50.8 | 102 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 50.3 | 101 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 52.5 | 105 | 70-130 |
| 75-25-2 | Bromoform | 50 | 50.0 | 100 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 57.4 | 115 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 46.5 | 93 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 48.1 | 96 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 49.7 | 99 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 49.5 | 99 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 52.1 | 104 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 46.6 | 93 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 50.3 | 101 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 55.8 | 112 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 51.5 | 103 | 70-130 |
| 67-66-3 | Chloroform | 50 | 51.6 | 103 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 58.7 | 117 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 46.7 | 93 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 48.1 | 96 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 55.3 | 111 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 47.6 | 95 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 47.1 | 94 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 48.9 | 98 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 69.0 | 138* a | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 52.6 | 105 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 50.1 | 100 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 53.2 | 106 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 50.0 | 100 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 51.2 | 102 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 51.5 | 103 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 50.8 | 102 | 70-130 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 34.4 | 69* a | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 52.3 | 105 | 70-130 |

* = Outside of Control Limits.

6.2.3

# Blank Spike Summary

Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2676-BS | N71219.D | 1 | 12/18/12 | JP | n/a | n/a | MSN2676 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-4

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 42.9 | 86 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 44.6 | 89 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 257 | 103 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 45.2 | 90 | 77-137 |
| 100-41-4 | Ethylbenzene | 50 | 53.6 | 107 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 50.4 | 101 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 52.4 | 105 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 49.2 | 98 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 53.5 | 107 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 42.2 | 84 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 48.0 | 96 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 52.1 | 104 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 51.2 | 102 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 49.9 | 100 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 48.5 | 97 | 70-130 |
| 100-42-5 | Styrene | 50 | 50.7 | 101 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 54.1 | 108 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 49.4 | 99 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 57.2 | 114 | 70-130 |
| 108-88-3 | Toluene | 50 | 52.0 | 104 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 49.3 | 99 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 49.1 | 98 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 45.7 | 91 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 50.8 | 102 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 50.4 | 101 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 55.0 | 110 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 48.1 | 96 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 49.2 | 98 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 49.5 | 99 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 50.4 | 101 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 50.7 | 101 | 70-130 |
| | m,p-Xylene | 100 | 102 | 102 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 51.0 | 102 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 153 | 102 | 70-130 |

* = Ontside of Control Limits.

# Blank Spike Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2676-BS | N71219.D | 1 | 12/18/12 | JP | n/a | n/a | MSN2676 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-4

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | 70-130% |
| 2037-26-5 | Toluene-D8 | 102% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16503-2MS | G122733.D | 1 | 12/10/12 | JM | n/a | n/a | MSG4879 |
| MC16503-2MSD | G122734.D | 1 | 12/10/12 | JM | n/a | n/a | MSG4879 |
| MC16503-2 | G122736.D | 1 | 12/10/12 | JM | n/a | n/a | MSG4879 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-1, MC16587-2, MC16587-3

| CAS No. | Compound | MC16503-2 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 1540 | 1610 | 105 | 1590 | 103 | 1 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 7690 | 1760 | 23* [a] | 1910 | 25* [a] | 8 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 1540 | 1550 | 101 | 1640 | 107 | 6 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 1540 | 1690 | 110 | 1650 | 107 | 2 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 1540 | 1480 | 96 | 1470 | 96 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 1540 | 1690 | 110 | 1680 | 109 | 1 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 1540 | 1460 | 95 | 1440 | 94 | 1 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 1540 | 1040 | 68* [a] | 1060 | 69* [a] | 2 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 1540 | 1670 | 109 | 1590 | 103 | 5 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 1540 | 1580 | 103 | 1680 | 109 | 6 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | 708 | | 1540 | 2430 | 112 | 2380 | 109 | 2 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | 102 | | 1540 | 1890 | 116 | 1870 | 115 | 1 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 1540 | 2950 | 192* [a] | 2940 | 191* [a] | 0 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 1540 | 2020 | 131* [a] | 1980 | 129 | 2 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 1540 | 1410 | 92 | 1360 | 88 | 4 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 1540 | 1530 | 100 | 1540 | 100 | 1 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 1540 | 1840 | 120 | 1810 | 118 | 2 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 1540 | 626 | 41 | 634 | 41 | 1 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 1540 | 1740 | 113 | 1720 | 112 | 1 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 1540 | 2170 | 141* [a] | 2100 | 137* [a] | 3 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 1540 | 1870 | 122 | 1790 | 116 | 4 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 1540 | 1820 | 118 | 1810 | 118 | 1 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 1540 | 1200 | 78 | 1210 | 79 | 1 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 1540 | 1640 | 107 | 1620 | 105 | 1 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorohenzene | ND | | 1540 | 1670 | 109 | 1630 | 106 | 2 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 1540 | 1550 | 101 | 1530 | 100 | 1 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 1540 | 1450 | 94 | 1370 | 89 | 6 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 1540 | 1920 | 125 | 1910 | 124 | 1 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 1540 | 1440 | 94 | 1430 | 93 | 1 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 1540 | 1870 | 122 | 1890 | 123 | 1 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 1540 | 1840 | 120 | 1820 | 118 | 1 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 1540 | 1810 | 118 | 1770 | 115 | 2 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 1540 | 1640 | 107 | 1650 | 107 | 1 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 1540 | 1370 | 89 | 1390 | 90 | 1 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 1540 | 1790 | 116 | 1770 | 115 | 1 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 1540 | 1680 | 109 | 1640 | 107 | 2 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16503-2MS | G122733.D | 1 | 12/10/12 | JM | n/a | n/a | MSG4879 |
| MC16503-2MSD | G122734.D | 1 | 12/10/12 | JM | n/a | n/a | MSG4879 |
| MC16503-2 | G122736.D | 1 | 12/10/12 | JM | n/a | n/a | MSG4879 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-1, MC16587-2, MC16587-3

| CAS No. | Compound | MC16503-2 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 1540 | 1500 | 98 | 1500 | 98 | 0 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 1540 | 1500 | 98 | 1510 | 98 | 1 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 7690 | 7970 | 104 | 7370 | 96 | 8 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 1540 | 1420 | 92 | 1440 | 94 | 1 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 660 | | 1540 | 2100 | 94 | 2090 | 93 | 0 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 1540 | 1630 | 106 | 1620 | 105 | 1 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 1540 | ND | 0* [a] | ND | 0* [a] | nc | 70-130/30 |
| 98-82-8 | Isopropylbenzene | 144 | | 1540 | 1900 | 114 | 1880 | 113 | 1 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | 93.8 | | 1540 | 1780 | 110 | 1750 | 108 | 2 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 1540 | 1670 | 109 | 1700 | 111 | 2 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 1540 | 1410 | 92 | 1450 | 94 | 3 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 1540 | 1480 | 96 | 1460 | 95 | 1 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 1540 | 1830 | 119 | 1820 | 118 | 1 | 70-130/30 |
| 91-20-3 | Naphthalene | 1360 | | 1540 | 3100 | 113 | 3260 | 124 | 5 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 553 | | 1540 | 2340 | 116 | 2300 | 114 | 2 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 1540 | 1440 | 94 | 1450 | 94 | 1 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 1540 | 1270 | 83 | 1260 | 82 | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 1540 | 1660 | 108 | 1710 | 111 | 3 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 1540 | 1390 | 90 | 1360 | 88 | 2 | 70-130/30 |
| 108-88-3 | Toluene | 613 | | 1540 | 2260 | 107 | 2230 | 105 | 1 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 1540 | 1890 | 123 | 1960 | 127 | 4 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 1540 | 1650 | 107 | 1660 | 108 | 1 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 1540 | 1690 | 110 | 1620 | 105 | 4 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 1540 | 1480 | 96 | 1500 | 98 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 1540 | 1590 | 103 | 1560 | 101 | 2 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 1540 | 1720 | 112 | 1630 | 106 | 5 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 1540 | 1490 | 97 | 1530 | 100 | 3 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 6280 | | 1540 | 7950 | 109 | 7850 | 102 | 1 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1720 | | 1540 | 3260 | 100 | 3310 | 103 | 2 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 1540 | 1740 | 113 | 1840 | 120 | 6 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 1540 | 1860 | 121 | 1900 | 124 | 2 | 70-130/30 |
| | m,p-Xylene | 3520 | | 3070 | 6450 | 95 | 6400 | 94 | 1 | 70-130/30 |
| 95-47-6 | o-Xylene | 1830 | | 1540 | 3330 | 98 | 3350 | 99 | 1 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 5360 | | 4610 | 9780 | 96 | 9750 | 95 | 0 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16503-2MS | G122733.D | 1 | 12/10/12 | JM | n/a | n/a | MSG4879 |
| MC16503-2MSD | G122734.D | 1 | 12/10/12 | JM | n/a | n/a | MSG4879 |
| MC16503-2 | G122736.D | 1 | 12/10/12 | JM | n/a | n/a | MSG4879 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-1, MC16587-2, MC16587-3

| CAS No. | Surrogate Recoveries | MS | MSD | MC16503-2 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 106% | 106% | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 97% | 93% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 100% | 101% | 96% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16587-5MS | G122788.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |
| MC16587-5MSD | G122789.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |
| MC16587-5 | G122785.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-5, MC16587-6, MC16587-7

| CAS No. | Compound | MC16587-5 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 5730 | 5900 | 103 | 6180 | 108 | 5 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 28700 | 9120 | 32* a | 9690 | 34* a | 6 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 5730 | 5750 | 100 | 6040 | 105 | 5 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 5730 | 6150 | 107 | 6110 | 107 | 1 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 5730 | 5390 | 94 | 5420 | 95 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 5730 | 6220 | 108 | 6220 | 108 | 0 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 5730 | 5380 | 94 | 5430 | 95 | 1 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 5730 | 4190 | 73 | 4280 | 75 | 2 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 5730 | 6020 | 105 | 6080 | 106 | 1 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 5730 | 6320 | 110 | 6210 | 108 | 2 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 5730 | 5790 | 101 | 5760 | 100 | 1 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 5730 | 6180 | 108 | 6190 | 108 | 0 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 5730 | 6510 | 114 | 6530 | 114 | 0 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 5730 | 7360 | 128 | 7250 | 126 | 2 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 5730 | 5230 | 91 | 5170 | 90 | 1 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 5730 | 5980 | 104 | 5950 | 104 | 1 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 5730 | 6790 | 118 | 6740 | 118 | 1 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 5730 | 2080 | 36 | 2190 | 38 | 5 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 5730 | 6420 | 112 | 6420 | 112 | 0 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 5730 | 7740 | 135* a | 7800 | 136* a | 1 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 5730 | 6110 | 107 | 6110 | 107 | 0 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 5730 | 6450 | 112 | 6550 | 114 | 2 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 5730 | 4840 | 84 | 4910 | 86 | 1 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 5730 | 5930 | 103 | 5970 | 104 | 1 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 5730 | 5930 | 103 | 5980 | 104 | 1 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 5730 | 5550 | 97 | 5590 | 97 | 1 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 5730 | 4970 | 87 | 5000 | 87 | 1 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 5730 | 7080 | 123 | 7000 | 122 | 1 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 5730 | 5350 | 93 | 5390 | 94 | 1 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 5730 | 6680 | 116 | 6680 | 116 | 0 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 5730 | 6760 | 118 | 6780 | 118 | 0 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 5730 | 6540 | 114 | 6550 | 114 | 0 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 5730 | 6130 | 107 | 6130 | 107 | 0 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 5730 | 5410 | 94 | 5470 | 95 | 1 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 5730 | 6610 | 115 | 6460 | 113 | 2 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 5730 | 6110 | 107 | 6010 | 105 | 2 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16587-5MS | G122788.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |
| MC16587-5MSD | G122789.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |
| MC16587-5 | G122785.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-5, MC16587-6, MC16587-7

| CAS No. | Compound | MC16587-5 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 5730 | 5620 | 98 | 5550 | 97 | 1 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 5730 | 5580 | 97 | 5630 | 98 | 1 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 28700 | 27300 | 95 | 27000 | 94 | 1 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 5730 | 5370 | 94 | 5410 | 94 | 1 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 36.7 | J | 5730 | 5670 | 98 | 5670 | 98 | 0 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 5730 | 5200 | 91 | 5260 | 92 | 1 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 5730 | 4750 | 83 | 4740 | 83 | 0 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 5730 | 6270 | 109 | 6310 | 110 | 1 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 5730 | 5870 | 102 | 5830 | 102 | 1 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 5730 | 6270 | 109 | 6340 | 111 | 1 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 5730 | 3920 | 68* a | 3910 | 68* a | 0 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 5730 | 5500 | 96 | 5520 | 96 | 0 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 5730 | 6900 | 120 | 6880 | 120 | 0 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 5730 | 6690 | 117 | 6890 | 120 | 3 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 5730 | 6320 | 110 | 6340 | 111 | 0 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 5730 | 5360 | 93 | 5340 | 93 | 0 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 5730 | 4980 | 87 | 5030 | 88 | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 5730 | 5680 | 99 | 5810 | 101 | 2 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 5730 | 5180 | 90 | 5200 | 91 | 0 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 5730 | 6100 | 106 | 6070 | 106 | 0 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 5730 | 6720 | 117 | 6970 | 122 | 4 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 5730 | 5790 | 101 | 5870 | 102 | 1 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 5730 | 6380 | 111 | 6340 | 111 | 1 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 5730 | 5510 | 96 | 5620 | 98 | 2 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 5730 | 5780 | 101 | 5740 | 100 | 1 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 5730 | 6180 | 108 | 6120 | 107 | 1 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 5730 | 5610 | 98 | 5680 | 99 | 1 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 5730 | 5610 | 98 | 5620 | 98 | 0 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 5730 | 5580 | 97 | 5590 | 97 | 0 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 5730 | 6510 | 114 | 6580 | 115 | 1 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 5730 | 6810 | 119 | 6650 | 116 | 2 | 70-130/30 |
| | m,p-Xylene | ND | | 11500 | 11600 | 101 | 11600 | 101 | 0 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 5730 | 6000 | 105 | 5990 | 104 | 0 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 80.3 | J | 17200 | 17600 | 102 | 17600 | 102 | 0 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16587-5MS | G122788.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |
| MC16587-5MSD | G122789.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |
| MC16587-5 | G122785.D | 1 | 12/11/12 | JM | n/a | n/a | MSG4880 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-5, MC16587-6, MC16587-7

| CAS No. | Surrogate Recoveries | MS | MSD | MC16587-5 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 106% | 106% | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 97% | 90% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | 98% | 90% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16648-12MS | N71233.D | 5 | 12/18/12 | JP | n/a | n/a | MSN2676 |
| MC16648-12MSD | N71234.D | 5 | 12/18/12 | JP | n/a | n/a | MSN2676 |
| MC16648-12 | N71230.D | 1 | 12/18/12 | JP | n/a | n/a | MSN2676 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-4

| CAS No. | Compound | MC16648-12 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 250 | 253 | 101 | 236 | 94 | 7 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 1250 | 652 | 52* [a] | 621 | 50* [a] | 5 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 250 | 1160 | 464* [a] | 1180 | 472* [a] | 2 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 250 | 268 | 107 | 245 | 98 | 9 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 250 | 261 | 104 | 240 | 96 | 8 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 250 | 272 | 109 | 250 | 100 | 8 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 250 | 274 | 110 | 257 | 103 | 6 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 250 | 256 | 102 | 250 | 100 | 2 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 250 | 261 | 104 | 266 | 106 | 2 | 70-130/30 |
| 78-93-3 | 2-Bntanone (MEK) | ND | | 250 | 233 | 93 | 236 | 94 | 1 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 250 | 255 | 102 | 239 | 96 | 6 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 250 | 261 | 104 | 236 | 94 | 10 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 250 | 252 | 101 | 231 | 92 | 9 | 70-130/30 |
| 75-15-0 | Carbon disnlfide | ND | | 250 | 277 | 111 | 247 | 99 | 11 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 250 | 241 | 96 | 230 | 92 | 5 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 250 | 259 | 104 | 242 | 97 | 7 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 250 | 298 | 119 | 265 | 106 | 12 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 250 | 273 | 109 | 247 | 99 | 10 | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 250 | 271 | 108 | 246 | 98 | 10 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 250 | 315 | 126 | 301 | 120 | 5 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 250 | 245 | 98 | 221 | 88 | 10 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 250 | 251 | 100 | 232 | 93 | 8 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 250 | 280 | 112 | 264 | 106 | 6 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 250 | 244 | 98 | 225 | 90 | 8 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 250 | 242 | 97 | 224 | 90 | 8 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 250 | 255 | 102 | 232 | 93 | 9 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 250 | 367 | 147* [b] | 333 | 133* [b] | 10 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 250 | 277 | 111 | 250 | 100 | 10 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 250 | 259 | 104 | 244 | 98 | 6 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 250 | 283 | 113 | 251 | 100 | 12 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 250 | 268 | 107 | 240 | 96 | 11 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 250 | 262 | 105 | 237 | 95 | 10 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 250 | 273 | 109 | 247 | 99 | 10 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 250 | 252 | 101 | 241 | 96 | 4 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 250 | 211 | 84 | 200 | 80 | 5 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 250 | 273 | 109 | 253 | 101 | 8 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16648-12MS | N71233.D | 5 | 12/18/12 | JP | n/a | n/a | MSN2676 |
| MC16648-12MSD | N71234.D | 5 | 12/18/12 | JP | n/a | n/a | MSN2676 |
| MC16648-12 | N71230.D | 1 | 12/18/12 | JP | n/a | n/a | MSN2676 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-4

| CAS No. | Compound | MC16648-12 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 250 | 227 | 91 | 216 | 86 | 5 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 250 | 235 | 94 | 232 | 93 | 1 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 1250 | 1360 | 109 | 1300 | 104 | 5 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 250 | 221 | 88 | 220 | 88 | 0 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 250 | 276 | 110 | 254 | 102 | 8 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 250 | 249 | 100 | 239 | 96 | 4 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 250 | 254 | 102 | 258 | 103 | 2 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 250 | 258 | 103 | 232 | 93 | 11 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 250 | 277 | 111 | 255 | 102 | 8 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 250 | 211 | 84 | 210 | 84 | 0 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 250 | 244 | 98 | 241 | 96 | 1 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 250 | 268 | 107 | 254 | 102 | 5 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 250 | 272 | 109 | 241 | 96 | 12 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 250 | 217 | 87 | 239 | 96 | 10 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 250 | 256 | 102 | 231 | 92 | 10 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 250 | 261 | 104 | 245 | 98 | 6 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethaue | ND | | 250 | 282 | 113 | 266 | 106 | 6 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 250 | 249 | 100 | 233 | 93 | 7 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 250 | 304 | 122 | 281 | 112 | 8 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 250 | 269 | 108 | 250 | 100 | 7 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 250 | 231 | 92 | 234 | 94 | 1 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 250 | 240 | 96 | 237 | 95 | 1 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 250 | 241 | 96 | 224 | 90 | 7 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 250 | 261 | 104 | 248 | 99 | 5 | 70-130/30 |
| 79-01-6 | Trichloroethene | 1.1 | | 250 | 262 | 104 | 244 | 97 | 7 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 250 | 295 | 118 | 267 | 107 | 10 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 250 | 243 | 97 | 235 | 94 | 3 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 250 | 256 | 102 | 233 | 93 | 9 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 250 | 257 | 103 | 234 | 94 | 9 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 250 | 260 | 104 | 248 | 99 | 5 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 250 | 276 | 110 | 243 | 97 | 13 | 70-130/30 |
| | m,p-Xylene | ND | | 500 | 533 | 107 | 493 | 99 | 8 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 250 | 261 | 104 | 248 | 99 | 5 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 750 | 794 | 106 | 741 | 99 | 7 | 70-130/30 |

* = Outside of Control Limits.

6.3.3

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16648-12MS | N71233.D | 5 | 12/18/12 | JP | n/a | n/a | MSN2676 |
| MC16648-12MSD | N71234.D | 5 | 12/18/12 | JP | n/a | n/a | MSN2676 |
| MC16648-12 | N71230.D | 1 | 12/18/12 | JP | n/a | n/a | MSN2676 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16587-4

| CAS No. | Surrogate Recoveries | MS | MSD | MC16648-12 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 102% | 101% | 99% | 70-130% |
| 2037-26-5 | Toluene-D8 | 103% | 103% | 102% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | 99% | 118% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

* = Outside of Control Limits.

# Volatile Internal Standard Area Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSG4879-CC4851 | Injection Date: | 12/10/12 |
| Lab File ID: | G122721.D | Injection Time: | 08:41 |
| Instrument ID: | GCMSG | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 263984 | 5.13 | 359014 | 6.27 | 169893 | 9.62 | 203716 | 12.25 | 52431 | 3.11 |
| Upper Limit [a] | 527968 | 5.63 | 718028 | 6.77 | 339786 | 10.12 | 407432 | 12.75 | 104862 | 3.61 |
| Lower Limit [b] | 131992 | 4.63 | 179507 | 5.77 | 84947 | 9.12 | 101858 | 11.75 | 26216 | 2.61 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSG4879-BS | 255080 | 5.13 | 344612 | 6.27 | 166053 | 9.62 | 201343 | 12.25 | 49252 | 3.10 |
| MSG4879-MB | 242412 | 5.13 | 329894 | 6.27 | 156563 | 9.62 | 187534 | 12.25 | 45957 | 3.10 |
| ZZZZZZ | 235773 | 5.13 | 318591 | 6.27 | 151704 | 9.62 | 182341 | 12.25 | 45174 | 3.14 |
| ZZZZZZ | 278994 | 5.13 | 375703 | 6.27 | 181908 | 9.62 | 217968 | 12.25 | 52891 | 3.10 |
| ZZZZZZ | 280507 | 5.13 | 375410 | 6.27 | 181319 | 9.62 | 218083 | 12.25 | 52726 | 3.10 |
| ZZZZZZ | 279777 | 5.13 | 374572 | 6.27 | 182673 | 9.62 | 219888 | 12.25 | 54765 | 3.10 |
| ZZZZZZ | 278675 | 5.13 | 375822 | 6.27 | 179276 | 9.62 | 217855 | 12.25 | 52551 | 3.10 |
| ZZZZZZ | 276053 | 5.13 | 373094 | 6.27 | 178716 | 9.62 | 224843 | 12.25 | 54811 | 3.10 |
| ZZZZZZ | 278630 | 5.13 | 373976 | 6.27 | 181379 | 9.62 | 219328 | 12.25 | 56447 | 3.10 |
| MC16503-2MS | 273024 | 5.13 | 370263 | 6.27 | 189308 | 9.63 | 218334 | 12.25 | 56892 | 3.14 |
| MC16503-2MSD | 268453 | 5.13 | 369366 | 6.27 | 185812 | 9.63 | 216693 | 12.25 | 56775 | 3.14 |
| ZZZZZZ | 287132 | 5.14 | 391088 | 6.27 | 198088 | 9.63 | 221284 | 12.25 | 58490 | 3.09 |
| MC16503-2 | 273289 | 5.13 | 371717 | 6.27 | 185097 | 9.62 | 218005 | 12.25 | 60131 | 3.13 |
| ZZZZZZ | 283634 | 5.13 | 387313 | 6.27 | 195586 | 9.63 | 222618 | 12.25 | 60658 | 3.09 |
| MC16587-1 | 271982 | 5.13 | 374249 | 6.27 | 180955 | 9.62 | 217972 | 12.25 | 56654 | 3.10 |
| MC16587-2 | 276049 | 5.13 | 374349 | 6.27 | 179675 | 9.62 | 218027 | 12.25 | 59068 | 3.11 |
| MC16587-3 | 279446 | 5.13 | 378598 | 6.27 | 182826 | 9.62 | 224653 | 12.25 | 61865 | 3.11 |
| ZZZZZZ | 281401 | 5.13 | 380645 | 6.27 | 181193 | 9.62 | 224701 | 12.25 | 59422 | 3.10 |
| ZZZZZZ | 281602 | 5.13 | 378605 | 6.27 | 181303 | 9.62 | 221226 | 12.25 | 58435 | 3.11 |
| ZZZZZZ | 277905 | 5.13 | 379871 | 6.27 | 180459 | 9.62 | 221077 | 12.25 | 61488 | 3.11 |
| ZZZZZZ | 277759 | 5.13 | 376156 | 6.27 | 180096 | 9.62 | 218808 | 12.25 | 58600 | 3.10 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSG4880-CC4851 | Injection Date: | 12/11/12 |
| Lab File ID: | G122772.D | Injection Time: | 12:27 |
| Instrument ID: | GCMSG | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 282854 | 5.13 | 386682 | 6.27 | 185876 | 9.62 | 224758 | 12.25 | 55938 | 3.10 |
| Upper Limit [a] | 565708 | 5.63 | 773364 | 6.77 | 371752 | 10.12 | 449516 | 12.75 | 111876 | 3.60 |
| Lower Limit [b] | 141427 | 4.63 | 193341 | 5.77 | 92938 | 9.12 | 112379 | 11.75 | 27969 | 2.60 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSG4880-BS | 279361 | 5.13 | 378357 | 6.27 | 182624 | 9.62 | 221524 | 12.25 | 56696 | 3.10 |
| MSG4880-MB | 277809 | 5.13 | 374897 | 6.27 | 182434 | 9.62 | 223449 | 12.25 | 56868 | 3.10 |
| ZZZZZZ | 280559 | 5.13 | 380568 | 6.27 | 185584 | 9.62 | 225884 | 12.25 | 57852 | 3.10 |
| ZZZZZZ | 279090 | 5.13 | 377463 | 6.27 | 191881 | 9.62 | 222529 | 12.25 | 55692 | 3.10 |
| ZZZZZZ | 282810 | 5.13 | 378518 | 6.27 | 187896 | 9.62 | 225464 | 12.25 | 52941 | 3.10 |
| ZZZZZZ | 287554 | 5.13 | 399703 | 6.27 | 222422 | 9.63 | 223337 | 12.25 | 58402 | 3.09 |
| MC16587-5 | 273233 | 5.13 | 377003 | 6.27 | 182140 | 9.62 | 225333 | 12.25 | 56555 | 3.10 |
| MC16587-6 | 282645 | 5.13 | 383059 | 6.27 | 188745 | 9.62 | 230746 | 12.25 | 55493 | 3.10 |
| MC16587-7 | 269959 | 5.13 | 368584 | 6.27 | 180494 | 9.62 | 220361 | 12.25 | 55539 | 3.10 |
| MC16587-5MS | 274869 | 5.13 | 372600 | 6.27 | 181935 | 9.62 | 224033 | 12.25 | 56514 | 3.10 |
| MC16587-5MSD | 272912 | 5.13 | 371776 | 6.27 | 180464 | 9.62 | 221659 | 12.25 | 58561 | 3.10 |
| ZZZZZZ | 276540 | 5.13 | 376992 | 6.27 | 182311 | 9.62 | 221396 | 12.25 | 58586 | 3.14 |
| ZZZZZZ | 274965 | 5.13 | 371930 | 6.27 | 181572 | 9.62 | 218163 | 12.25 | 56459 | 3.13 |
| ZZZZZZ | 271327 | 5.13 | 365963 | 6.27 | 178291 | 9.62 | 215271 | 12.25 | 62280 | 3.14 |
| ZZZZZZ | 272406 | 5.13 | 366878 | 6.27 | 177996 | 9.62 | 216973 | 12.25 | 54588 | 3.13 |
| ZZZZZZ | 276682 | 5.13 | 370068 | 6.27 | 179261 | 9.62 | 218768 | 12.25 | 57430 | 3.13 |
| ZZZZZZ | 282570 | 5.13 | 381461 | 6.27 | 181918 | 9.62 | 183642 | 12.25 | 53900 | 3.10 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.2

# Volatile Internal Standard Area Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSN2676-CC2675 | Injection Date: | 12/18/12 |
| Lab File ID: | N71218.D | Injection Time: | 06:29 |
| Instrument ID: | GCMSN | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 580216 | 9.01 | 774279 | 9.88 | 390883 | 13.14 | 396507 | 15.70 | 182181 | 6.56 |
| Upper Limit [a] | 1160432 | 9.51 | 1548558 | 10.38 | 781766 | 13.64 | 793014 | 16.20 | 364362 | 7.06 |
| Lower Limit [b] | 290108 | 8.51 | 387140 | 9.38 | 195442 | 12.64 | 198254 | 15.20 | 91091 | 6.06 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSN2676-BS | 585774 | 9.01 | 777713 | 9.88 | 388773 | 13.14 | 392587 | 15.70 | 184608 | 6.56 |
| MSN2676-MB | 558031 | 9.01 | 763423 | 9.88 | 353961 | 13.14 | 303911 | 15.70 | 187121 | 6.58 |
| MC16587-4 | 517021 | 9.01 | 688359 | 9.88 | 316346 | 13.14 | 258822 | 15.70 | 176730 | 6.58 |
| ZZZZZZ | 567847 | 9.01 | 748376 | 9.88 | 349213 | 13.14 | 290130 | 15.70 | 164804 | 6.57 |
| ZZZZZZ | 575691 | 9.01 | 759020 | 9.88 | 355622 | 13.14 | 289380 | 15.70 | 168799 | 6.58 |
| ZZZZZZ | 550570 | 9.01 | 741534 | 9.88 | 349776 | 13.14 | 293029 | 15.70 | 158207 | 6.58 |
| ZZZZZZ | 547396 | 9.01 | 731850 | 9.88 | 337788 | 13.14 | 291441 | 15.70 | 155640 | 6.58 |
| ZZZZZZ | 544346 | 9.01 | 723597 | 9.88 | 332316 | 13.14 | 284190 | 15.70 | 174652 | 6.59 |
| MC16648-12 | 550948 | 9.01 | 737094 | 9.88 | 346132 | 13.14 | 285823 | 15.70 | 167856 | 6.57 |
| ZZZZZZ | 546604 | 9.01 | 718548 | 9.88 | 334652 | 13.14 | 277041 | 15.70 | 155893 | 6.58 |
| ZZZZZZ | 509230 | 9.01 | 671403 | 9.88 | 309891 | 13.14 | 257151 | 15.70 | 169098 | 6.57 |
| MC16648-12MS | 517266 | 9.01 | 694941 | 9.88 | 355150 | 13.14 | 355502 | 15.70 | 159406 | 6.55 |
| MC16648-12MSD | 579841 | 9.01 | 769109 | 9.88 | 389310 | 13.14 | 401442 | 15.70 | 185877 | 6.56 |
| ZZZZZZ | 564180 | 9.01 | 749205 | 9.88 | 351694 | 13.14 | 325149 | 15.70 | 181588 | 6.57 |
| ZZZZZZ | 557459 | 9.01 | 743025 | 9.88 | 346348 | 13.14 | 296641 | 15.70 | 171315 | 6.58 |
| ZZZZZZ | 546105 | 9.01 | 739975 | 9.88 | 346724 | 13.14 | 289114 | 15.70 | 171146 | 6.57 |
| ZZZZZZ | 555586 | 9.01 | 722667 | 9.88 | 339566 | 13.14 | 295467 | 15.70 | 180970 | 6.57 |
| ZZZZZZ | 541823 | 9.01 | 712036 | 9.88 | 337962 | 13.14 | 280902 | 15.70 | 169144 | 6.57 |
| ZZZZZZ | 554899 | 9.01 | 734338 | 9.88 | 334620 | 13.14 | 298824 | 15.70 | 168932 | 6.57 |
| ZZZZZZ | 546689 | 9.01 | 731731 | 9.88 | 351523 | 13.14 | 355670 | 15.70 | 169301 | 6.57 |
| ZZZZZZ | 561653 | 9.01 | 748676 | 9.88 | 350911 | 13.14 | 339081 | 15.70 | 190795 | 6.57 |
| ZZZZZZ | 573934 | 9.01 | 756463 | 9.88 | 351642 | 13.14 | 355677 | 15.70 | 170572 | 6.57 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Surrogate Recovery Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC16587-4 | N71222.D | 97.0 | 102.0 | 120.0 |
| MC16648-12MS | N71233.D | 102.0 | 103.0 | 101.0 |
| MC16648-12MSD | N71234.D | 101.0 | 103.0 | 99.0 |
| MSN2676-BS | N71219.D | 101.0 | 102.0 | 101.0 |
| MSN2676-MB | N71221.D | 102.0 | 101.0 | 116.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

6.5.1

# Volatile Surrogate Recovery Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC16587-1 | G122738.D | 102.0 | 94.0 | 95.0 |
| MC16587-2 | G122739.D | 101.0 | 92.0 | 94.0 |
| MC16587-3 | G122740.D | 101.0 | 93.0 | 93.0 |
| MC16587-5 | G122785.D | 100.0 | 90.0 | 90.0 |
| MC16587-6 | G122786.D | 100.0 | 93.0 | 96.0 |
| MC16587-7 | G122787.D | 100.0 | 94.0 | 93.0 |
| MC16503-2MS | G122733.D | 106.0 | 98.0 | 100.0 |
| MC16503-2MSD | G122734.D | 106.0 | 97.0 | 101.0 |
| MC16587-5MS | G122788.D | 106.0 | 97.0 | 97.0 |
| MC16587-5MSD | G122789.D | 106.0 | 97.0 | 98.0 |
| MSG4879-BS | G122722.D | 128.0 | 117.0 | 117.0 |
| MSG4879-MB | G122725.D | 133.0* [a] | 122.0 | 123.0 |
| MSG4880-BS | G122773.D | 109.0 | 100.0 | 101.0 |
| MSG4880-MB | G122775.D | 111.0 | 103.0 | 101.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

(a) Outside control limits. Associated target analytes are non-detect.

6.5.2

New England ACCUTEST LABORATORIES

## GC Volatiles

### QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31352-MB | BK19728.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16587-1, MC16587-2, MC16587-3, MC16587-5, MC16587-6, MC16587-7

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 2.5 | 1.1 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.5 | 0.96 | ug/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 108% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 98% | 61-167% |

# Method Blank Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31406-MB | BK19937.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16587-4



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.015 | 0.013 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.015 | 0.010 | ug/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 100% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 95% | 36-173% |

# Blank Spike Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31352-BS | BK19729.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16587-1, MC16587-2, MC16587-3, MC16587-5, MC16587-6, MC16587-7

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 65 | 66.5 | 102 | 59-142 |
| 106-93-4 | 1,2-Dibromoethane | 65 | 60.3 | 93 | 56-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 107% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 97% | 61-167% |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31406-BS | BK19938.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16587-4

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 0.071 | 0.067 | 94 | 60-140 |
| 106-93-4 | 1,2-Dibromoethane | 0.071 | 0.071 | 100 | 60-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 104% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 96% | 36-173% |

7.2.2

7

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31352-MS | BK19730.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |
| OP31352-MSD | BK19731.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |
| MC16336-6 | BK19735.D | 1 | 12/09/12 | AP | 12/08/12 | OP31352 | GBK712 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16587-1, MC16587-2, MC16587-3, MC16587-5, MC16587-6, MC16587-7



| CAS No. | Compound | MC16336-6 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 367 | 337 | 92 | 382 | 91 | 13 | 40-156/27 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 367 | 304 | 83 | 342 | 82 | 12 | 48-141/27 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC16336-6 | Limits |
|---|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 99% | 91% | 96% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 91% | 85% | 94% | 61-167% |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31406-MS | BK19941.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |
| OP31406-MSD | BK19942.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |
| MC16600-6 | BK19943.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16587-4



| CAS No. | Compound | MC16600-6 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 0.071 | 0.066 | 93 | 0.064 | 90 | 3 | 64-141/29 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 0.071 | 0.072 | 101 | 0.067 | 94 | 7 | 63-163/27 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC16600-6 | Limits |
|---|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 110% | 108% | 107% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 100% | 100% | 99% | 36-173% |

* = Outside of Control Limits.

# Volatile Surrogate Recovery Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8011 Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] | S1 [b] |
|---|---|---|---|
| MC16587-4 | BK19945.D | 111.0 | 95.0 |
| OP31406-BS | BK19938.D | 104.0 | 96.0 |
| OP31406-MB | BK19937.D | 100.0 | 95.0 |
| OP31406-MS | BK19941.D | 110.0 | 100.0 |
| OP31406-MSD | BK19942.D | 108.0 | 100.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Bromofluorobenzene (S) | 36-173% |

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1

# Volatile Surrogate Recovery Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Method: SW846 8011 | Matrix: SO |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] | S1 [b] |
|---|---|---|---|
| MC16587-1 | BK19747.D | 72.0 | 76.0 |
| MC16587-2 | BK19748.D | 72.0 | 73.0 |
| MC16587-3 | BK19751.D | 112.0 | 124.0 |
| MC16587-5 | BK19752.D | 96.0 | 104.0 |
| MC16587-6 | BK19750.D | 103.0 | 101.0 |
| MC16587-7 | BK19753.D | 117.0 | 118.0 |
| OP31352-BS | BK19729.D | 107.0 | 97.0 |
| OP31352-MB | BK19728.D | 108.0 | 98.0 |
| OP31352-MS | BK19730.D | 99.0 | 91.0 |
| OP31352-MSD | BK19731.D | 91.0 | 85.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Bromofluorobenzene (S) | 61-167% |

(a) Recovery from GC signal #2
(b) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBK712-ICC712 | Injection Date: | 12/09/12 |
| Lab File ID: | BK19722.D | Injection Time: | 17:47 |
| Instrument ID: | GCBK | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.56 | 4.90 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| OP31352-MB | BK19728.D | 12/09/12 | 20:14 | 4.57 | 4.90 |
| OP31352-BS | BK19729.D | 12/09/12 | 20:38 | 4.56 | 4.90 |
| OP31352-MS | BK19730.D | 12/09/12 | 21:03 | 4.57 | 4.90 |
| OP31352-MSD | BK19731.D | 12/09/12 | 21:27 | 4.57 | 4.90 |
| ZZZZZZ | BK19732.D | 12/09/12 | 21:52 | 4.56 | 4.90 |
| ZZZZZZ | BK19733.D | 12/09/12 | 22:16 | 4.56 | 4.90 |
| ZZZZZZ | BK19734.D | 12/09/12 | 22:41 | 4.56 | 4.90 |
| MC16336-6 | BK19735.D | 12/09/12 | 23:05 | 4.57 | 4.90 |
| ZZZZZZ | BK19736.D | 12/09/12 | 23:30 | 4.56 | 4.90 |
| ZZZZZZ | BK19737.D | 12/09/12 | 23:55 | 4.56 | 4.90 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #2
(b) Retention time from GC signal #1

7.5.1

7

# GC Surrogate Retention Time Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBK712-CC712 | Injection Date: | 12/10/12 |
| Lab File ID: | BK19738.D | Injection Time: | 00:20 |
| Instrument ID: | GCBK | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.56 | 4.90 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| ZZZZZZ | BK19739.D | 12/10/12 | 00:44 | 4.57 | 4.90 |
| ZZZZZZ | BK19740.D | 12/10/12 | 01:09 | 4.57 | 4.90 |
| ZZZZZZ | BK19741.D | 12/10/12 | 01:33 | 4.56 | 4.90 |
| ZZZZZZ | BK19742.D | 12/10/12 | 01:58 | 4.56 | 4.90 |
| ZZZZZZ | BK19743.D | 12/10/12 | 02:23 | 4.56 | 4.90 |
| ZZZZZZ | BK19744.D | 12/10/12 | 02:47 | 4.56 | 4.90 |
| ZZZZZZ | BK19745.D | 12/10/12 | 03:12 | 4.56 | 4.90 |
| ZZZZZZ | BK19746.D | 12/10/12 | 03:36 | 4.56 | 4.90 |
| MC16587-1 | BK19747.D | 12/10/12 | 04:01 | 4.56 | 4.90 |
| MC16587-2 | BK19748.D | 12/10/12 | 04:25 | 4.56 | 4.90 |

Surrogate Compounds

S1 = Bromoflnorobenzene (S)

(a) Retention time from GC signal #2
(b) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBK712-CC712 | Injection Date: | 12/10/12 |
| Lab File ID: | BK19749.D | Injection Time: | 04:50 |
| Instrument ID: | GCBK | Method: | SW846 8011 |

| | SI [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.56 | 4.90 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| MC16587-6 | BK19750.D | 12/10/12 | 05:14 | 4.56 | 4.90 |
| MC16587-3 | BK19751.D | 12/10/12 | 05:39 | 4.56 | 4.90 |
| MC16587-5 | BK19752.D | 12/10/12 | 06:04 | 4.56 | 4.90 |
| MC16587-7 | BK19753.D | 12/10/12 | 06:28 | 4.56 | 4.90 |
| GBK712-ECC712 | BK19754.D | 12/10/12 | 06:53 | 4.56 | 4.90 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #2
(b) Retention time from GC signal #1

7.5.3

7

# GC Surrogate Retention Time Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBK716-ICC716 | Injection Date: | 12/13/12 |
| Lab File ID: | BK19932.D | Injection Time: | 18:03 |
| Instrument ID: | GCBK | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.52 | 4.85 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | SI [b] RT |
|---|---|---|---|---|---|
| ZZZZZZ | BK19935A.D | 12/13/12 | I9:16 | 4.52 | 4.85 |
| ZZZZZZ | BK19935B.D | 12/13/12 | 19:16 | 4.52 | 4.85 |
| OP31405-MB | BK19937A.D | 12/13/12 | 20:04 | 4.52 | 4.85 |
| OP31406-MB | BK19937.D | 12/13/12 | 20:04 | 4.52 | 4.85 |
| OP31405-BS | BK19938A.D | 12/13/12 | 20:28 | 4.52 | 4.85 |
| OP31406-BS | BK19938.D | 12/13/12 | 20:28 | 4.52 | 4.85 |
| OP31405-BSD | BK19939.D | 12/13/12 | 20:52 | 4.52 | 4.85 |
| ZZZZZZ | BK19940.D | 12/13/12 | 21:17 | 4.52 | 4.85 |
| OP31406-MS | BK19941.D | 12/13/12 | 21:41 | 4.52 | 4.85 |
| OP31406-MSD | BK19942.D | 12/13/12 | 22:06 | 4.52 | 4.85 |
| MC16600-6 | BK19943.D | 12/13/12 | 22:30 | 4.52 | 4.85 |
| ZZZZZZ | BK19944.D | 12/13/12 | 22:55 | 4.52 | 4.85 |
| MC16587-4 | BK19945.D | 12/13/12 | 23:19 | 4.52 | 4.85 |
| ZZZZZZ | BK19946.D | 12/13/12 | 23:43 | 4.52 | 4.85 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #2
(b) Retention time from GC signal #1

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## General Chemistry

## QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC16587
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Sample: MC16587-1 | Analyzed: 07-DEC-12 by CF | | Method: SM21 2540 B MOD. |
| ClientID: MW-16-14 | | | |
| Wet Weight (Total) | 33.122 | g | |
| Tare Weight | 24.612 | g | |
| Dry Weight (Total) | 32.818 | g | |
| Solids, Percent | 96.4 | % | |
| Sample: MC16587-2 | Analyzed: 07-DEC-12 by CF | | Method: SM21 2540 B MOD. |
| ClientID: MW-16-27 | | | |
| Wet Weight (Total) | 11.537 | g | |
| Tare Weight | 2.611 | g | |
| Dry Weight (Total) | 11.255 | g | |
| Solids, Percent | 96.8 | % | |
| Sample: MC16587-3 | Analyzed: 07-DEC-12 by CF | | Method: SM21 2540 B MOD. |
| ClientID: MW-16-37 | | | |
| Wet Weight (Total) | 11.128 | g | |
| Tare Weight | 2.625 | g | |
| Dry Weight (Total) | 10.81 | g | |
| Solids, Percent | 96.3 | % | |
| Sample: MC16587-5 | Analyzed: 07-DEC-12 by CF | | Method: SM21 2540 B MOD. |
| ClientID: MW-20-11 | | | |
| Wet Weight (Total) | 11.434 | g | |
| Tare Weight | 2.631 | g | |
| Dry Weight (Total) | 10.401 | g | |
| Solids, Percent | 88.3 | % | |
| Sample: MC16587-6 | Analyzed: 07-DEC-12 by CF | | Method: SM21 2540 B MOD. |
| ClientID: MW-20-21 | | | |
| Wet Weight (Total) | 13.709 | g | |
| Tare Weight | 2.642 | g | |
| Dry Weight (Total) | 11.615 | g | |
| Solids, Percent | 81.1 | % | |
| Sample: MC16587-7 | Analyzed: 07-DEC-12 by CF | | Method: SM21 2540 B MOD. |
| ClientID: MW-20-41 | | | |
| Wet Weight (Total) | 12.196 | g | |
| Tare Weight | 2.629 | g | |
| Dry Weight (Total) | 11.917 | g | |
| Solids, Percent | 97.1 | % | |

# Roxana Drilling 2013 Data Review

**Laboratory SDG: MC16644**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 2/25/2013**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| MW-21-21 | MW-21-31 |
| MW-21-31-Dup | MW-21-41 |
| TRIP BLANK | |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS/LCSD recoveries were outside evaluation criteria. VOC MS/MSD recoveries were outside of evaluation criteria for sample MW-21-31. The initial calibration verification recovery for acrolein and acetone exceeded 50 percent difference (%D). The continuing calibration verification recovery for acrolein exceeded 50 percent difference (%D). These issues are addressed further in the appropriate sections below.

The cooler receipt form did not indicate any problems.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSM1796-BS | VOCs | Acetone | **146** | NA | 70-130 |
| MSM1796-BS | VOCs | Acrolein | **66** | NA | 70-130 |
| MSM1796-BS | VOCs | 2-Butanone (MEK) | **132** | NA | 70-130 |

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSM1796-BS | VOCs | 2-Hexanone | **134** | NA | 70-130 |
| MSG4888-BS | VOCs | Acrolein | **46** | NA | 70-130 |
| MSG4888-BS | VOCs | 2-Chloroethyl vinyl ether | **63** | NA | 70-130 |
| MSG4888-BS | VOCs | Chloromethane | **139** | NA | 70-130 |
| MSG4888-BS | VOCs | Dichlorodifluoromethane | **179** | NA | 70-130 |
| MSG4888-BS | VOCs | 2,2-Dichloropropane | **141** | NA | 70-130 |
| MSG4888-BS | VOCs | 1,4-Dioxane | **69** | NA | 70-130 |
| MSK2161-BS/BSD | VOCs | Acrolein | **0/0** | NA | 70-130/25 |
| MSK2161-BS/BSD | VOCs | Chloromethane | **131**/112 | 16 | 70-130/25 |

Analytical data that required qualification based on LCS/LCSD data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. Professional judgment was used to not reject acrolein in samples associated with LCS/LCSD MSK2161-BS/BSD due to acrolein not being spiked due to standard degradation. Please refer to Section 12.0 of this review for additional qualifications regarding samples associated with the MSK2161-BS/BSD LCS/LCSD. LCS MSG4888-BS was associated with the trip blank quality control sample and is not qualified.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| MW-21-41 | VOCs | Acrolein | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, although not requested, sample MW-21-31 was spiked and analyzed for 8260 VOCs and sample MW-21-21 was spiked and analyzed for 8011 VOCs.

*Were MS/MSD recoveries within evaluation criteria?*

No

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/ RPD Criteria |
|---|---|---|---|---|---|
| MW-21-31 | VOCs | Acrolein | **27/27** | 1 | 70-130/30 |
| MW-21-31 | VOCs | Chloromethane | **131/138** | 5 | 70-130/30 |
| MW-21-31 | VOCs | Dichlorodifluoromethane | 125/**131** | 5 | 70-130/30 |
| MW-21-31 | VOCs | Vinyl chloride | 118/**131** | 10 | 70-130/30 |

USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone and LCS recoveries were within evaluation criteria with the exception of compounds listed and qualified as

appropriate in Section 5.0 of this data review. No further qualification of the data was required.

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

Yes

| Field ID | Field Duplicate ID |
|---|---|
| MW-21-31 | MW-21-31-Dup |

*Were field duplicates within evaluation criteria?*

Yes

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

Yes, sample MW-21-21 and field duplicate pair MW-21-31/MW-21-31-Dup were associated with the initial calibration verification recovery for acetone, and continuing calibration verification recovery for acrolein, that exceeded 50 percent difference (%D). Sample MW-21-41 was associated with initial calibration verification recovery for acetone that exceeded 50 percent difference (%D). Analytes in samples associated with ICV and CCV %D greater than 50% were qualified as summarized in the following table.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| MW-21-21 | VOCs | Acetone | **UJ** |
| MW-21-21 | VOCs | Acrolein | **UJ** |
| MW-21-31 | VOCs | Acetone | **UJ** |
| MW-21-31 | VOCs | Acrolein | **UJ** |
| MW-21-31-Dup | VOCs | Acetone | **UJ** |
| MW-21-31-Dup | VOCs | Acrolein | **UJ** |
| MW-21-41 | VOCs | Acetone | **UJ** |

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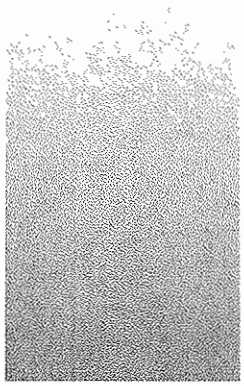
01/02/13





## Technical Report for

**Shell Oil**

URSMOSTL: Roxana Drilling, Roxana, IL

21562735.00015

Accutest Job Number: MC16644

Sampling Date: 12/06/12

Report to:

URS Corporation

elizabeth.kunkel@URS.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **79**

Reviewed on 2/25/2013

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Reza Tand
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) ISO 17025:2005 (L2235)

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# Sample Summary

Shell Oil

Job No: MC16644

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562735.00015

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| MC16644-1 | 12/06/12 | 11:55 | WPJS | 12/07/12 | SO | Soil | MW-21-21 |
| MC16644-2 | 12/06/12 | 12:00 | WPJS | 12/07/12 | SO | Soil | MW-21-31 |
| MC16644-3 | 12/06/12 | 12:00 | WPJS | 12/07/12 | SO | Soil | MW-21-31 DUP |
| MC16644-4 | 12/06/12 | 12:05 | WPJS | 12/07/12 | SO | Soil | MW-21-41 |
| MC16644-5 | 12/06/12 | 00:00 | WPJS | 12/07/12 | AQ | Trip Blank Water | TRIP BLANK |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC16644 |
| **Site:** | URSMOSTL: Roxana Drilling, Roxana, IL | **Report Date** | 1/2/2013 10:27:36 AM |

4 Sample(s), 1 Trip Blank(s) were collected on 12/06/2012 and were received at Accutest on 12/07/2012 properly preserved, at 2.9 Deg. C and intact. These Samples received an Accutest job number of MC16644. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. 1-Chlorohexane was searched in the library search and reported only if detections were found.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSG4888

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16643-8MS, MC16643-8MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 1,4-Dioxane, 2,2-Dichloropropane, 2-Chloroethyl vinyl ether, Acrolein, Chloromethane, Dichlorodifluoromethane are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 2,2-Dichloropropane, 2-Chloroethyl vinyl ether, 4-Methyl-2-pentanone (MIBK), Acrolein, Bromoform, Chloromethane, Dichlorodifluoromethane, Vinyl chloride are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2,2-Dichloropropane, 2-Chloroethyl vinyl ether, 4-Methyl-2-pentanone (MIBK), Acrolein, Bromoform, Chloromethane, Dichlorodifluoromethane, Vinyl chloride are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Initial calibration verification stanard MSG4862-ICV4862 for acrolein exceeds 50% difference. Acrolein is within criteria in continuing calibration check standard MSG4888-CC4862.

**Matrix** SO **Batch ID:** MSK2161

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC16644-2MS, MC16644-2MSD were used as the QC samples indicated.
- Initial calibration verification stanard MSK2132-ICV2132 for acrolein: Outside control limits due to standard degradation. Refer to Continuing Calibration.
- Blank Spike Recovery(s) for Chloromethane are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for Chloromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for Chloromethane, Dichlorodifluoromethane, Vinyl chloride are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSK2161-BS/BSD for Acrolein: Outside control limits due to standard degradation. Refer to Continuing Calibration.
- MC16644-2MS/MSD for Acrolein: Outside control limits due to possible matrix interference.
- Continuing calibration check MSK2161-CC2132 for acrolein exceeds 50% difference. Acrolein is considered a difficult method analyte.
- Initial calibration verification MSK2132-ICV2132 for acetone exceeds 50% Difference. Acetone is within criteria in continuing calibration check standard MSK2161-CC2132.

**Matrix** SO **Batch ID:** MSM1796

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16639-13MS, MC16639-13MSD were used as the QC samples indicated.

## Volatiles by GCMS By Method SW846 8260B

| Matrix SO | Batch ID: MSM1796 |
|---|---|

- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 2-Butanone (MEK), 2-Hexanone, Acetone, Acrolein are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Acetone, Acrolein, Dichlorodifluoromethane, Naphthalene, Styrene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,2-Dichlorobenzene, Acrolein, Styrene, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Naphthalene are outside control limits. Outside control limits due to possible matrix interferenee. Refer to Blank Spike.
- RPD(s) for MSD for 1,1,2,2-Tetrachloroethane, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,2-Dichloroethane, Naphthalene, Vinyl Acetate are outside control limits for sample MC16639-13MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- Initial calibration verification MSM1784-ICV1784 for acetone exceeds 50% Difference (response bias high). Associated samples are non-detect for this compound.

## Volatiles by GC By Method SW846 8011

| Matrix AQ | Batch ID: OP31406 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16600-6MS, MC16600-6MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

| Matrix SO | Batch ID: OP31434 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16644-1MS, MC16644-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN41238 |
|---|---|

- Sample(s) MC16644-1DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC16644).

# Summary of Hits



Job Number: MC16644
Account: Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Collected: 12/06/12

| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| MC16644-1 | MW-21-21 | | | | | |
| n-Butylbenzene | | 0.0915 J | 0.57 | 0.021 | mg/kg | SW846 8260B |
| Naphthalene | | 0.289 J | 0.57 | 0.14 | mg/kg | SW846 8260B |
| MC16644-2 | MW-21-31 | | | | | |
| n-Butylbenzene | | 0.116 J | 0.57 | 0.021 | mg/kg | SW846 8260B |
| sec-Butylbenzene | | 0.0600 J | 0.57 | 0.026 | mg/kg | SW846 8260B |
| MC16644-3 | MW-21-31 DUP | | | | | |
| n-Butylbenzene | | 2.12 | 2.0 | 0.075 | mg/kg | SW846 8260B |
| sec-Butylbenzene | | 1.27 J | 2.0 | 0.093 | mg/kg | SW846 8260B |
| Isopropylbenzene | | 0.718 J | 2.0 | 0.092 | mg/kg | SW846 8260B |
| p-Isopropyltoluene | | 0.731 J | 2.0 | 0.072 | mg/kg | SW846 8260B |
| Naphthalene | | 1.25 J | 2.0 | 0.51 | mg/kg | SW846 8260B |
| n-Propylbenzene | | 1.34 J | 2.0 | 0.41 | mg/kg | SW846 8260B |
| MC16644-4 | MW-21-41 | | | | | |
| Benzene | | 0.282 | 0.00081 | 0.00048 | mg/kg | SW846 8260B |
| n-Butylbenzene | | 0.0041 J | 0.0081 | 0.00030 | mg/kg | SW846 8260B |
| sec-Butylbenzene | | 0.0058 J | 0.0081 | 0.00037 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0076 | 0.0032 | 0.00039 | mg/kg | SW846 8260B |
| Isopropylbenzene | | 0.0186 | 0.0081 | 0.00037 | mg/kg | SW846 8260B |
| p-Isopropyltoluene | | 0.0017 J | 0.0081 | 0.00029 | mg/kg | SW846 8260B |
| Naphthalene | | 0.0076 J | 0.0081 | 0.0020 | mg/kg | SW846 8260B |
| n-Propylbenzene | | 0.0239 | 0.0081 | 0.0016 | mg/kg | SW846 8260B |
| Toluene | | 0.0060 J | 0.0081 | 0.0014 | mg/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | | 0.00093 J | 0.0081 | 0.00036 | mg/kg | SW846 8260B |
| m,p-Xylene | | 0.0065 | 0.0032 | 0.0013 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0065 | 0.0032 | 0.00039 | mg/kg | SW846 8260B |
| MC16644-5 | TRIP BLANK | | | | | |

No hits reported in this sample.

New England ACCUTEST LABORATORIES



Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-21-21 | | |
| Lab Sample ID: | MC16644-1 | Date Sampled: | 12/06/12 |
| Matrix: | SO - Soil | Date Received: | 12/07/12 |
| Method: | SW846 8260B | Percent Solids: | 95.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K65709.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.70 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.57 | 0.14 | mg/kg | |
| 107-02-8 | Acrolein | ND | 2.9 | 1.1 | mg/kg | |
| 107-13-1 | Acrylonitrile | ND | 2.9 | 0.14 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.057 | 0.034 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.57 | 0.025 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.57 | 0.043 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.23 | 0.024 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.23 | 0.23 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.23 | 0.059 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.57 | 0.14 | mg/kg | |
| 104-51-8 | n-Butylbenzene | 0.0915 | 0.57 | 0.021 | mg/kg | J |
| 135-98-8 | sec-Butylbenzene | ND | 0.57 | 0.026 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.57 | 0.10 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.57 | 0.019 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.23 | 0.083 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.23 | 0.031 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.57 | 0.14 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.57 | 0.23 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.23 | 0.059 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.57 | 0.053 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.57 | 0.13 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.57 | 0.026 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.23 | 0.034 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.23 | 0.025 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.23 | 0.026 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.23 | 0.024 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.23 | 0.13 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.23 | 0.031 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.23 | 0.033 | mg/kg | |
| 75-35-4 | 1,1-Dichloroetbene | ND | 0.23 | 0.042 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.23 | 0.034 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.23 | 0.033 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | MW-21-21 | | |
| Lab Sample ID: | MC16644-1 | Date Sampled: | 12/06/12 |
| Matrix: | SO - Soil | Date Received: | 12/07/12 |
| Method: | SW846 8260B | Percent Solids: | 95.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |



VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.23 | 0.043 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.57 | 0.026 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.57 | 0.099 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.57 | 0.030 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.23 | 0.020 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.23 | 0.057 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 2.9 | 2.9 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.57 | 0.078 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.23 | 0.028 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.57 | 0.053 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.57 | 0.057 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.57 | 0.026 | mg/kg | |
| 99-87-6 | p-Isopropyltolnene | ND | 0.57 | 0.020 | mg/kg | |
| 1634-04-4 | Methyl Tert Bntyl Ether | ND | 0.23 | 0.033 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.57 | 0.057 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.57 | 0.056 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.23 | 0.13 | mg/kg | |
| 91-20-3 | Naphthalene | 0.289 | 0.57 | 0.14 | mg/kg | J |
| 103-65-1 | n-Propylbenzene | ND | 0.57 | 0.12 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.57 | 0.027 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.57 | 0.11 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.23 | 0.049 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.23 | 0.026 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.57 | 0.097 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.57 | 0.027 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.57 | 0.026 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.23 | 0.036 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.23 | 0.084 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.23 | 0.024 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.23 | 0.035 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.57 | 0.033 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.57 | 0.026 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.57 | 0.024 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.57 | 0.064 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.23 | 0.031 | mg/kg | |
| | m,p-Xylene | ND | 0.23 | 0.090 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.23 | 0.027 | mg/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.23 | 0.027 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-21-21 | | |
| Lab Sample ID: | MC16644-1 | Date Sampled: | 12/06/12 |
| Matrix: | SO - Soil | Date Received: | 12/07/12 |
| Method: | SW846 8260B | Percent Solids: | 95.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 129% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 113% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 102% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-21-21 | | |
| Lab Sample ID: | MC16644-1 | Date Sampled: | 12/06/12 |
| Matrix: | SO - Soil | Date Received: | 12/07/12 |
| Method: | SW846 8011 SW846 3546 | Percent Solids: | 95.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK20059.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.4 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.0010 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 166% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 156% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-21-31 | | |
| Lab Sample ID: | MC16644-2 | Date Sampled: | 12/06/12 |
| Matrix: | SO - Soil | Date Received: | 12/07/12 |
| Method: | SW846 8260B | Percent Solids: | 94.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K65710.D | 1 | 12/14/12 | GK | n/a | n/a | MSK216I |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.77 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.57 | 0.14 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 2.9 | 1.1 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 2.9 | 0.14 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.057 | 0.034 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.57 | 0.025 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.57 | 0.043 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.23 | 0.024 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.23 | 0.23 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.23 | 0.059 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.57 | 0.14 | mg/kg | |
| 104-51-8 | n-Butylbenzene | 0.116 | 0.57 | 0.021 | mg/kg | J |
| 135-98-8 | sec-Butylbenzene | 0.0600 | 0.57 | 0.026 | mg/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 0.57 | 0.10 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.57 | 0.019 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.23 | 0.083 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.23 | 0.031 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.57 | 0.14 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.57 | 0.23 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.23 | 0.059 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.57 | 0.053 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.57 | 0.13 | mg/kg | |
| 106-43-4 | p-Chlorotolnene | ND | 0.57 | 0.026 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.23 | 0.034 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.23 | 0.025 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.23 | 0.026 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.23 | 0.024 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.23 | 0.13 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.23 | 0.031 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.23 | 0.033 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.23 | 0.042 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.23 | 0.034 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.23 | 0.033 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-21-31 | | |
| Lab Sample ID: | MC16644-2 | Date Sampled: | 12/06/12 |
| Matrix: | SO - Soil | Date Received: | 12/07/12 |
| Method: | SW846 8260B | Percent Solids: | 94.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.23 | 0.042 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.57 | 0.026 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.57 | 0.099 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.57 | 0.030 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.23 | 0.019 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.23 | 0.057 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 2.9 | 2.9 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.57 | 0.078 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.23 | 0.028 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.57 | 0.053 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.57 | 0.057 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.57 | 0.026 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.57 | 0.020 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.23 | 0.033 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.57 | 0.057 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.57 | 0.056 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.23 | 0.13 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.57 | 0.14 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.57 | 0.12 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.57 | 0.027 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.57 | 0.11 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.23 | 0.048 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.23 | 0.026 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.57 | 0.097 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.57 | 0.027 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.57 | 0.026 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.23 | 0.036 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.23 | 0.084 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.23 | 0.024 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.23 | 0.035 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.57 | 0.033 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.57 | 0.026 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.57 | 0.024 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.57 | 0.064 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.23 | 0.031 | mg/kg | |
| | m,p-Xylene | ND | 0.23 | 0.090 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.23 | 0.027 | mg/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.23 | 0.027 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-21-31 | | |
| Lab Sample ID: | MC16644-2 | Date Sampled: | 12/06/12 |
| Matrix: | SO - Soil | Date Received: | 12/07/12 |
| Method: | SW846 8260B | Percent Solids: | 94.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 118% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 110% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-21-31 | | |
| Lab Sample ID: | MC16644-2 | Date Sampled: | 12/06/12 |
| Matrix: | SO - Soil | Date Received: | 12/07/12 |
| Method: | SW846 8011 SW846 3546 | Percent Solids: | 94.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK20060.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.3 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.0010 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 136% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 126% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-21-31 DUP | | |
| Lab Sample ID: | MC16644-3 | Date Sampled: | 12/06/12 |
| Matrix: | SO - Soil | Date Received: | 12/07/12 |
| Method: | SW846 8260B | Percent Solids: | 94.9 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K65711.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 1.31 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 2.0 | 0.51 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 10 | 4.0 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 10 | 0.51 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.20 | 0.12 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 2.0 | 0.090 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 2.0 | 0.15 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.81 | 0.086 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.81 | 0.81 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.81 | 0.21 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 2.0 | 0.51 | mg/kg | |
| 104-51-8 | n-Bntylbenzene | 2.12 | 2.0 | 0.075 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | 1.27 | 2.0 | 0.093 | mg/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 2.0 | 0.36 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 2.0 | 0.067 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.81 | 0.29 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.81 | 0.11 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.51 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 2.0 | 0.81 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.81 | 0.21 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.19 | mg/kg | |
| 95-49-8 | o-Chlorotolnene | ND | 2.0 | 0.45 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 2.0 | 0.092 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.81 | 0.12 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.81 | 0.087 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.81 | 0.091 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.81 | 0.085 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.81 | 0.46 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.81 | 0.11 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.81 | 0.12 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.81 | 0.15 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.81 | 0.12 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.81 | 0.12 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-21-31 DUP | | |
| Lab Sample ID: | MC16644-3 | Date Sampled: | 12/06/12 |
| Matrix: | SO - Soil | Date Received: | 12/07/12 |
| Method: | SW846 8260B | Percent Solids: | 94.9 |
| Project: | URSMOSTL: Roxana Drilliug, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.81 | 0.15 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 2.0 | 0.094 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 2.0 | 0.35 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 2.0 | 0.11 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.81 | 0.069 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.81 | 0.20 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 10 | 10 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 2.0 | 0.28 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.81 | 0.098 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 2.0 | 0.19 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 2.0 | 0.20 | mg/kg | |
| 98-82-8 | Isopropylbenzene | 0.718 | 2.0 | 0.092 | mg/kg | J |
| 99-87-6 | p-Isopropyltoluene | 0.731 | 2.0 | 0.072 | mg/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.81 | 0.12 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 2.0 | 0.20 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 2.0 | 0.20 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.81 | 0.47 | mg/kg | |
| 91-20-3 | Naphthalene | 1.25 | 2.0 | 0.51 | mg/kg | J |
| 103-65-1 | n-Propylbenzene | 1.34 | 2.0 | 0.41 | mg/kg | J |
| 100-42-5 | Styrene | ND | 2.0 | 0.095 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 2.0 | 0.40 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.81 | 0.17 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.81 | 0.093 | mg/kg | |
| 108-88-3 | Toluene | ND | 2.0 | 0.34 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 2.0 | 0.096 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 2.0 | 0.093 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.81 | 0.13 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.81 | 0.30 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.81 | 0.086 | mg/kg | |
| 75-69-4 | Trichloroflnoromethane | ND | 0.81 | 0.12 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 2.0 | 0.12 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 2.0 | 0.091 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 2.0 | 0.087 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 2.0 | 0.23 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.81 | 0.11 | mg/kg | |
| | m,p-Xylene | ND | 0.81 | 0.32 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.81 | 0.097 | mg/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.81 | 0.097 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-21-31 DUP | | |
| Lab Sample ID: | MC16644-3 | Date Sampled: | 12/06/12 |
| Matrix: | SO - Soil | Date Received: | 12/07/12 |
| Method: | SW846 8260B | Percent Solids: | 94.9 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 118% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 112% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 111% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-21-31 DUP | | |
| Lab Sample ID: | MC16644-3 | Date Sampled: | 12/06/12 |
| Matrix: | SO - Soil | Date Received: | 12/07/12 |
| Method: | SW846 8011 SW846 3546 | Percent Solids: | 94.9 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK20061.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.4 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.0010 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 132% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 124% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-21-41 | | |
| Lab Sample ID: | MC16644-4 | Date Sampled: | 12/06/12 |
| Matrix: | SO - Soil | Date Received: | 12/07/12 |
| Method: | SW846 8260B | Percent Solids: | 81.5 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M52943.D | 1 | 12/17/12 | AMY | n/a | n/a | MSM1796 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 3.79 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0081 | 0.0020 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 0.040 | 0.016 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 0.040 | 0.0020 | mg/kg | |
| 71-43-2 | Benzene | 0.282 | 0.00081 | 0.00048 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0081 | 0.00036 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0081 | 0.00060 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0032 | 0.00034 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0032 | 0.0032 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0032 | 0.00084 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0081 | 0.0020 | mg/kg | |
| 104-51-8 | n-Butylbenzene | 0.0041 | 0.0081 | 0.00030 | mg/kg | J |
| 135-98-8 | sec-Butylbenzene | 0.0058 | 0.0081 | 0.00037 | mg/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 0.0081 | 0.0014 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0081 | 0.00027 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0032 | 0.0012 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0032 | 0.00045 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0081 | 0.0020 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0081 | 0.0032 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0032 | 0.00083 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0081 | 0.00075 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0081 | 0.0018 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0081 | 0.00037 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0032 | 0.00048 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0032 | 0.00035 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0032 | 0.00037 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0032 | 0.00034 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0032 | 0.0018 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0032 | 0.00044 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0032 | 0.00047 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0032 | 0.00059 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0032 | 0.00049 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0032 | 0.00046 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-21-41 | | |
| Lab Sample ID: | MC16644-4 | Date Sampled: | 12/06/12 |
| Matrix: | SO - Soil | Date Received: | 12/07/12 |
| Method: | SW846 8260B | Percent Solids: | 81.5 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0032 | 0.00060 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0081 | 0.00037 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0081 | 0.0014 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0081 | 0.00043 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0032 | 0.00028 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0032 | 0.00080 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.040 | 0.040 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0081 | 0.0011 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0076 | 0.0032 | 0.00039 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0081 | 0.00075 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0081 | 0.00081 | mg/kg | |
| 98-82-8 | Isopropylbenzene | 0.0186 | 0.0081 | 0.00037 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | 0.0017 | 0.0081 | 0.00029 | mg/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0032 | 0.00047 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0081 | 0.00081 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0081 | 0.00080 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0032 | 0.0019 | mg/kg | |
| 91-20-3 | Naphthalene | 0.0076 | 0.0081 | 0.0020 | mg/kg | J |
| 103-65-1 | n-Propylbenzene | 0.0239 | 0.0081 | 0.0016 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0081 | 0.00038 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0081 | 0.0016 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0032 | 0.00069 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0032 | 0.00037 | mg/kg | |
| 108-88-3 | Toluene | 0.0060 | 0.0081 | 0.0014 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0081 | 0.00038 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0081 | 0.00037 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0032 | 0.00051 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0032 | 0.0012 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0032 | 0.00034 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0032 | 0.00049 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0081 | 0.00047 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 0.00093 | 0.0081 | 0.00036 | mg/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0081 | 0.00035 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0081 | 0.00090 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0032 | 0.00044 | mg/kg | |
| | m,p-Xylene | 0.0065 | 0.0032 | 0.0013 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.0032 | 0.00039 | mg/kg | |
| 1330-20-7 | Xylene (total) | 0.0065 | 0.0032 | 0.00039 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-21-41 | | |
| Lab Sample ID: | MC16644-4 | Date Sampled: | 12/06/12 |
| Matrix: | SO - Soil | Date Received: | 12/07/12 |
| Method: | SW846 8260B | Percent Solids: | 81.5 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 91% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 119% | | 70-130% |
| 460-00-4 | 4-Bromofluorobeuzene | 93% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | MW-21-41 | | |
| Lab Sample ID: | MC16644-4 | Date Sampled: | 12/06/12 |
| Matrix: | SO - Soil | Date Received: | 12/07/12 |
| Method: | SW846 8011 SW846 3546 | Percent Solids: | 81.5 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK20062.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.3 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0030 | 0.0014 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0030 | 0.0012 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 154% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 150% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16644-5 | Date Sampled: | 12/06/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/07/12 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | G122990.D | 1 | 12/18/12 | JM | n/a | n/a | MSG4888 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 3.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.2 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.24 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.62 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.3 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.58 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.78 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.4 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.61 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.55 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.64 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.61 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.87 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.47 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.50 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 1.3 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.50 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.73 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.65 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.48 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.53 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.93 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.45 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.64 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.7 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.62 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.41 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.95 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16644-5 | Date Sampled: | 12/06/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/07/12 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.72 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.64 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 1.6 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.91 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.45 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.20 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 15 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.81 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.51 | ug/l | |
| 87-68-3 | Hexachlorobntadiene | ND | 5.0 | 2.1 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.50 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.57 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.41 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 2.9 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.1 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.83 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.58 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.45 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.57 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.60 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.42 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.51 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.85 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.50 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.78 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.29 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.85 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.35 | ng/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.47 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.3 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.63 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.73 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.58 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.58 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16644-5 | Date Sampled: | 12/06/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/07/12 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |



VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 78% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 84% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 91% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16644-5 | Date Sampled: | 12/06/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/07/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19946.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 35.3 ml | 2.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.015 | 0.013 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.015 | 0.010 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 105% | | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 122% | | 36-173% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

## Misc. Forms



# Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

ACCUTEST LABORATORIES

# CHAIN OF CUSTODY

Accutest Laboratories of New England
495 Technology Center West, Building One
TEL. 508-481-6200 FAX 508-481-7753
www.accutest.com

PAGE 1 OF 1

FED-EX Tracking #
Bottle Order Control #
Accutest Quote #
Accutest Job # MC16644

| Client / Reporting Information | Project Information | Requested Analysis (see TEST CODE sheet) | Matrix Codes |
|---|---|---|---|
| Company Name: URS | Project Name: Roxana Drilling | | DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB- Equipment Blank; RB- Rinse Blank; TB Trip Blank |
| Street Address: | Street: | | |
| City: State: Zip: | City: Roxana, IL | Billing Information (If different from Report to): Company Name: URS | |
| Project Contact: E. Kunkel; E-mail: | Project#: 21562735.00015 | Street Address: | |
| Phone #: Fax #: | Client PO#: | City: State: Zip: | |
| Sampler(s) Name(s): W. Pennington, J. Staetter; Phone #: | Project Manager: D. Palmer | Attention: PO#: | |

| Accutest Sample # | Field ID / Point of Collection | MEDI/EX Vial # | Collection Date | Collection Time | Sampled by | Matrix | # of bottles | HCl | NaOH | HNO3 | H2SO4 | NONE | DI Water | MEOH | ENCORE | Bisulfite | VOC 8260 | VOC 8011 | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | MW-21-21 ✓ | | 12/6/12 | 1155 | LP/JS | SO | 4 | | | | | X | | X | | X | X | X | |
| -2 | MW-21-31 ✓ | | ↓ | 1200 | ↓ | ↓ | ↓ | | | | | X | | X | | X | X | X | |
| -3 | MW-21-31 Dup ✓ | | ↓ | 1200 | ↓ | ↓ | ↓ | | | | | X | | X | | X | X | X | |
| -4 | MW-21-41 ✓ | | ↓ | 1205 | ↓ | ↓ | ↓ | | | | | X | | X | | X | X | X | |
| -5 | Trip Blank ✓ | | ↓ | | | | ↓ | | | | | | | | | | X | X | |
| | | | | | | | | | | | | | | | | | | | 10I4,8C |
| | | | | | | | | | | | | | | | | | | | 3G2 |

Turnaround Time (Business days): [X] Std. 10 Business Days; [ ] Std. 5 Business Days (By Contract only); [ ] 5 Day RUSH; [ ] 3 Day EMERGENCY; [ ] 2 Day EMERGENCY; [ ] 1 Day EMERGENCY
Emergency & Rush T/A data available VIA Labtink

Approved By (Accutest PM) / Date

Data Deliverable Information: [ ] Commercial "A" (Level 1); [ ] Commercial "B" (Level 2); [X] FULLT1 (Level 3+4); [ ] CT RCP; [ ] MA MCP; [ ] NYASP Category A; [ ] NYASP Category B; [ ] State Forms; [X] EDD Format; [ ] Other
Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

| Relinquished by Sampler | Date Time | Received By | Relinquished By | Date Time | Received By |
|---|---|---|---|---|---|
| 1 Wendy P[illegible] | 12/6/12 1400 | 1 Fed Ex | 2 FX | 12-7-12 930 | 2 Brunch |
| 3 | | 3 | 4 | | 4 |
| 5 | | 5 | Custody Seal # [ ] Intact [ ] Not intact | Preserved where applicable [ ] | On Ice [ ] Cooler Temp. 2.9°C |

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**MC16644: Chain of Custody**
**Page 1 of 2**

ACCUTEST LABORATORIES

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC16644 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 12/7/2012 Delivery Method: Client Service Action Required at Login: No

Project: ROXANA DRILLING No. Coolers: 1 Airbill #'s:

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2. Custody Seals Intact: | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification: | Infared gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservatio | Y or N | N/A |
|---|---|---|
| 1. Trip Blank present / cooler: | ☑ ☐ | ☐ |
| 2. Trip Blank listed on COC: | ☑ ☐ | ☐ |
| 3. Samples preserved properly: | ☑ ☐ | |
| 4. VOCs headspace free: | ☑ ☐ | ☐ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles: | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree: | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1. Sample recvd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3. Condition of sample: | Intact |

| Sample Integrity - Instructions | Y or N | N/A |
|---|---|---|
| 1. Analysis requested is clear: | ☑ ☐ | |
| 2. Bottles received for unspecified tests | ☐ ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ ☐ | |
| 4. Compositing instructions clear: | ☐ ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ ☐ | ☑ |

Comments

Accutest Laboratories
V 508 481 6200

495 Technology Center West Bldg One
F 508 481 7753

Marlborough MA
www.accutest.com

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**MC16644: Chain of Custody**
**Page 2 of 2**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC16644

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562735.00015



| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC16644-1 Collected: 06-DEC-12 11:55 By: WPJS Received: 07-DEC-12 By: MW-21-21 | | | | | | |
| MC16644-1 | SM21 2540 B MOD. | 11-DEC-12 | MC | | | %SOL |
| MC16644-1 | SW846 8260B | 14-DEC-12 10:32 | GK | | | V8260SL+ |
| MC16644-1 | SW846 8011 | 16-DEC-12 18:43 | AP | 14-DEC-12 | BJ | V8011SL |
| MC16644-2 Collected: 06-DEC-12 12:00 By: WPJS Received: 07-DEC-12 By: MW-21-31 | | | | | | |
| MC16644-2 | SM21 2540 B MOD. | 11-DEC-12 | MC | | | %SOL |
| MC16644-2 | SW846 8260B | 14-DEC-12 10:59 | GK | | | V8260SL+ |
| MC16644-2 | SW846 8011 | 16-DEC-12 19:08 | AP | 14-DEC-12 | BJ | V8011SL |
| MC16644-3 Collected: 06-DEC-12 12:00 By: WPJS Received: 07-DEC-12 By: MW-21-31 DUP | | | | | | |
| MC16644-3 | SM21 2540 B MOD. | 11-DEC-12 | MC | | | %SOL |
| MC16644-3 | SW846 8260B | 14-DEC-12 11:26 | GK | | | V8260SL+ |
| MC16644-3 | SW846 8011 | 16-DEC-12 19:33 | AP | 14-DEC-12 | BJ | V8011SL |
| MC16644-4 Collected: 06-DEC-12 12:05 By: WPJS Received: 07-DEC-12 By: MW-21-41 | | | | | | |
| MC16644-4 | SM21 2540 B MOD. | 11-DEC-12 | MC | | | %SOL |
| MC16644-4 | SW846 8011 | 16-DEC-12 19:58 | AP | 14-DEC-12 | BJ | V8011SL |
| MC16644-4 | SW846 8260B | 17-DEC-12 11:27 | AMY | | | V8260SL+ |
| MC16644-5 Collected: 06-DEC-12 00:00 By: WPJS Received: 07-DEC-12 By: TRIP BLANK | | | | | | |
| MC16644-5 | SW846 8011 | 13-DEC-12 23:43 | AP | 13-DEC-12 | BJ | V8011SL |
| MC16644-5 | SW846 8260B | 18-DEC-12 12:48 | JM | | | V8260SL+ |

# Accutest Internal Chain of Custody



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 12/07/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16644-1.1 | Walk In Ref #5 | Miranda Cardullo | 12/11/12 08:51 | Retrieve from Storage |
| MC16644-1.1 | Miranda Cardullo | Walk In Ref #5 | 12/11/12 09:54 | Return to Storage |
| MC16644-1.1 | Walk In Ref #5 | Chris Cataldo | 12/14/12 13:57 | Retrieve from Storage |
| MC16644-1.1 | Chris Cataldo | Walk In Ref #5 | 12/14/12 20:59 | Return to Storage |
| MC16644-1.4 | VOC Ref #10 | Gary Krasinski | 12/11/12 14:38 | Retrieve from Storage |
| MC16644-1.4 | Gary Krasinski | VOC Ref #10 | 12/17/12 09:04 | Return to Storage |
| MC16644-1.4 | VOC Ref #10 | Gary Krasinski | 12/27/12 12:32 | Retrieve from Storage |
| MC16644-1.4 | Gary Krasinski | VOC Ref #10 | 12/28/12 12:41 | Return to Storage |
| MC16644-1.4 | VOC Ref #10 | Jaime Maslowski | 12/28/12 12:44 | Retrieve from Storage |
| MC16644-1.4 | Jaime Maslowski | VOC Ref #10 | 01/02/13 10:04 | Return to Storage |
| MC16644-2.1 | Walk In Ref #5 | Miranda Cardullo | 12/11/12 08:51 | Retrieve from Storage |
| MC16644-2.1 | Miranda Cardullo | Walk In Ref #5 | 12/11/12 09:54 | Return to Storage |
| MC16644-2.1 | Walk In Ref #5 | Chris Cataldo | 12/14/12 13:57 | Retrieve from Storage |
| MC16644-2.1 | Chris Cataldo | Walk In Ref #5 | 12/14/12 20:59 | Return to Storage |
| MC16644-2.4 | VOC Ref #10 | Gary Krasinski | 12/11/12 14:38 | Retrieve from Storage |
| MC16644-2.4 | Gary Krasinski | VOC Ref #10 | 12/17/12 09:04 | Return to Storage |
| MC16644-2.4 | VOC Ref #10 | Gary Krasinski | 12/27/12 12:32 | Retrieve from Storage |
| MC16644-2.4 | Gary Krasinski | VOC Ref #10 | 12/28/12 12:41 | Return to Storage |
| MC16644-2.4 | VOC Ref #10 | Jaime Maslowski | 12/28/12 12:44 | Retrieve from Storage |
| MC16644-2.4 | Jaime Maslowski | VOC Ref #10 | 01/02/13 10:04 | Return to Storage |
| MC16644-3.1 | Walk In Ref #5 | Miranda Cardullo | 12/11/12 08:51 | Retrieve from Storage |
| MC16644-3.1 | Miranda Cardullo | Walk In Ref #5 | 12/11/12 09:54 | Return to Storage |
| MC16644-3.1 | Walk In Ref #5 | Chris Cataldo | 12/14/12 13:57 | Retrieve from Storage |
| MC16644-3.1 | Chris Cataldo | Walk In Ref #5 | 12/14/12 20:59 | Return to Storage |
| MC16644-3.4 | VOC Ref #10 | Gary Krasinski | 12/11/12 14:38 | Retrieve from Storage |
| MC16644-3.4 | Gary Krasinski | VOC Ref #10 | 12/17/12 09:04 | Return to Storage |
| MC16644-3.4 | VOC Ref #10 | Gary Krasinski | 12/27/12 12:32 | Retrieve from Storage |
| MC16644-3.4 | Gary Krasinski | VOC Ref #10 | 12/28/12 12:41 | Return to Storage |
| MC16644-3.4 | VOC Ref #10 | Jaime Maslowski | 12/28/12 12:44 | Retrieve from Storage |
| MC16644-3.4 | Jaime Maslowski | VOC Ref #10 | 01/02/13 10:04 | Return to Storage |
| MC16644-4.1 | Walk In Ref #5 | Miranda Cardullo | 12/11/12 08:51 | Retrieve from Storage |
| MC16644-4.1 | Miranda Cardullo | Walk In Ref #5 | 12/11/12 09:54 | Return to Storage |
| MC16644-4.1 | Walk In Ref #5 | Chris Cataldo | 12/14/12 13:57 | Retrieve from Storage |
| MC16644-4.1 | Chris Cataldo | Walk In Ref #5 | 12/14/12 20:59 | Return to Storage |
| MC16644-4.3 | VOC Ref #10 | Amy Min Yang | 12/17/12 11:08 | Retrieve from Storage |
| MC16644-4.3 | Amy Min Yang | GCMSM | 12/17/12 11:08 | Load on Instrument |

5.3

# Accutest Internal Chain of Custody



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 12/07/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16644-4.4 | VOC Ref #10 | Gary Krasinski | 12/11/12 14:38 | Retrieve from Storage |
| MC16644-4.4 | Gary Krasinski | VOC Ref #10 | 12/12/12 10:27 | Return to Storage |
| MC16644-5.1 | VOC Ref #3 | Jaime Maslowski | 12/18/12 11:34 | Retrieve from Storage |
| MC16644-5.1 | Jaime Maslowski | GCMSG | 12/18/12 11:35 | Load on Instrument |
| MC16644-5.1 | GCMSG | Jaime Maslowski | 12/19/12 14:26 | Unload from Instrument |
| MC16644-5.1 | Jaime Maslowski | VOC Ref #3 | 12/19/12 14:28 | Return to Storage |
| MC16644-5.3 | VOC Ref #3 | Bijan Jafari | 12/13/12 04:40 | Retrieve from Storage |
| MC16644-5.3 | Bijan Jafari | | 12/14/12 17:43 | Depleted |

5.3
5

New England ACCUTEST LABORATORIES

## GC/MS Volatiles

6

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2161-MB | K65707.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-1, MC16644-2, MC16644-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-I | Acetone | ND | 250 | 63 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 500 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 1300 | 63 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 11 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 19 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 11 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 100 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 26 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 63 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 9.2 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | I1 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 44 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 8.2 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 36 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 14 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 63 | ng/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 100 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 26 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 23 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 55 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 11 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 15 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 57 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 14 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 14 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 18 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 15 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 19 | ng/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 12 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 43 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 13 | ug/kg | |

# Method Blank Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2161-MB | K65707.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-1, MC16644-2, MC16644-3



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 8.5 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropeue | ND | 100 | 25 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 34 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 12 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 23 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 25 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 11 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.9 | ug/kg | |
| 1634-04-4 | Metbyl Tert Butyl Ether | ND | 100 | 14 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 25 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 25 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 58 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 63 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 51 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 12 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ng/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 21 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 11 | ug/kg | |
| 108-88-3 | Tolueue | ND | 250 | 42 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 12 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 11 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 16 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 37 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 11 | ug/kg | |
| 75-69-4 | Trichlorofluorometbane | ND | 100 | 15 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 15 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 11 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 11 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 28 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 14 | ng/kg | |
| | m,p-Xylene | ND | 100 | 39 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 12 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 12 | ug/kg | |

# Method Blank Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2161-MB | K65707.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-1, MC16644-2, MC16644-3

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dihromofluoromethane | 128% | 70-130% |
| 2037-26-5 | Toluene-D8 | 110% | 70-130% |
| 460-00-4 | 4-Bromofluorohenzene | 99% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/kg | |

# Method Blank Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1796-MB | M52942.D | 1 | 12/17/12 | AMY | n/a | n/a | MSM1796 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 25 | 1.3 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.29 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.37 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 2.0 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.52 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.88 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.16 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.73 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.28 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 1.3 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 2.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.52 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.46 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.23 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.30 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.22 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.23 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.21 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.27 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.29 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.37 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.37 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.23 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.87 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.26 | ug/kg | |

# Method Blank Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1796-MB | M52942.D | 1 | 12/17/12 | AMY | n/a | n/a | MSM1796 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 0.17 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.50 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.68 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.24 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 0.46 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 0.50 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.29 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.50 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.49 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 1.2 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 1.3 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 1.0 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.23 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.43 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.23 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.85 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobeuzene | ND | 5.0 | 0.24 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 0.23 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.31 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.73 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.30 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.29 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.22 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.21 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 0.56 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.27 | ug/kg | |
| | m,p-Xyleue | ND | 2.0 | 0.79 | ug/kg | |
| 95-47-6 | o-Xyleue | ND | 2.0 | 0.24 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.24 | ug/kg | |

6.1.2

# Method Blank Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1796-MB | M52942.D | 1 | 12/17/12 | AMY | n/a | n/a | MSM1796 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-4

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 93% | 70-130% |
| 2037-26-5 | Toluene-D8 | 111% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 89% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/kg | |

# Method Blank Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4888-MB | G122987.D | 1 | 12/18/12 | JM | n/a | n/a | MSG4888 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 3.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.2 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.24 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.62 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.3 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.58 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.78 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.4 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.61 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.55 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.64 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.61 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.87 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.47 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.50 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 1.3 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.50 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.73 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.65 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.48 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.53 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.93 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.45 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.64 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.7 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.62 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.41 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.95 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.72 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.64 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 1.6 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.91 | ug/l | |

# Method Blank Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4888-MB | G122987.D | 1 | 12/18/12 | JM | n/a | n/a | MSG4888 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.45 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.20 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 15 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.81 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.51 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 2.1 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.50 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.57 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.41 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 2.9 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.1 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.83 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.58 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.45 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.57 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.60 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.42 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.51 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.85 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.50 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.78 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.29 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.85 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.35 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.47 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.3 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.63 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.73 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.58 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.58 | ug/l | |

# Method Blank Summary

Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4888-MB | G122987.D | 1 | 12/18/12 | JM | n/a | n/a | MSG4888 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-5

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 79% | 70-130% |
| 2037-26-5 | Toluene-D8 | 84% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 91% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

# Blank Spike Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1796-BS | M52939.D | 1 | 12/17/12 | AMY | n/a | n/a | MSM1796 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 73.0 | 146* a | 70-130 |
| 107-02-8 | Acrolein | 250 | 164 | 66* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 39.2 | 78 | 70-130 |
| 71-43-2 | Benzene | 50 | 50.4 | 101 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 55.5 | 111 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 52.6 | 105 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 53.3 | 107 | 70-130 |
| 75-25-2 | Bromoform | 50 | 52.4 | 105 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 50.4 | 101 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 65.9 | 132* a | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 52.7 | 105 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 52.1 | 104 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 51.1 | 102 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 50.3 | 101 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 53.1 | 106 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 52.3 | 105 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 48.1 | 96 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 41.1 | 82 | 10-160 |
| 67-66-3 | Chloroform | 50 | 50.5 | 101 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 51.4 | 103 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 49.0 | 98 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 50.5 | 101 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 56.4 | 113 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 52.3 | 105 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 52.7 | 105 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 53.4 | 107 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 60.7 | 121 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 47.0 | 94 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 48.3 | 97 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 52.7 | 105 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 50.4 | 101 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 50.1 | 100 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 49.5 | 99 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 52.4 | 105 | 70-130 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 50.9 | 102 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 52.5 | 105 | 70-130 |

* = Outside of Control Limits.

# Blank Spike Summary

Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1796-BS | M52939.D | 1 | 12/17/12 | AMY | n/a | n/a | MSM1796 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 51.3 | 103 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 55.6 | 111 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 247 | 99 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 55.6 | 111 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 54.4 | 109 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 58.2 | 116 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 67.1 | 134* [a] | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 52.6 | 105 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 55.9 | 112 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 56.2 | 112 | 70-130 |
| 108-10-1 | 4-Metbyl-2-pentanone (MIBK) | 50 | 45.1 | 90 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 51.4 | 103 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 48.2 | 96 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 55.8 | 112 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 50.6 | 101 | 70-130 |
| 100-42-5 | Styrene | 50 | 53.9 | 108 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 56.2 | 112 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 47.9 | 96 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 59.2 | 118 | 70-130 |
| 108-88-3 | Toluene | 50 | 57.2 | 114 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 55.5 | 111 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 57.7 | 115 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 51.3 | 103 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroetbane | 50 | 52.1 | 104 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 53.0 | 106 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 51.0 | 102 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 47.9 | 96 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 53.4 | 107 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 52.6 | 105 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 40.0 | 80 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 47.0 | 94 | 70-130 |
| | m,p-Xylene | 100 | 108 | 108 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 52.8 | 106 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 161 | 107 | 70-130 |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1796-BS | M52939.D | 1 | 12/17/12 | AMY | n/a | n/a | MSM1796 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-4

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | 70-130% |
| 2037-26-5 | Toluene-D8 | 118% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 89% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4888-BS | G122984.D | 1 | 12/18/12 | JM | n/a | n/a | MSG4888 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-5

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 62.6 | 125 | 70-130 |
| 107-02-8 | Acrolein | 250 | 114 | 46* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 41.1 | 82 | 70-130 |
| 71-43-2 | Benzene | 50 | 56.7 | 113 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 53.4 | 107 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 45.9 | 92 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 50.9 | 102 | 70-130 |
| 75-25-2 | Bromoform | 50 | 39.0 | 78 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 54.0 | 108 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 53.8 | 108 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 59.6 | 119 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 56.7 | 113 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 54.8 | 110 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 58.2 | 116 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 53.5 | 107 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 50.1 | 100 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 58.7 | 117 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 31.5 | 63* a | 70-130 |
| 67-66-3 | Chloroform | 50 | 54.5 | 109 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 69.7 | 139* a | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 57.0 | 114 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 57.5 | 115 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 46.1 | 92 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 50.7 | 101 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 54.2 | 108 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 55.6 | 111 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 89.3 | 179* a | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 59.1 | 118 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 46.5 | 93 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 57.1 | 114 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 54.5 | 109 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 56.1 | 112 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 53.6 | 107 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 45.6 | 91 | 70-130 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 70.3 | 141* a | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 54.9 | 110 | 70-130 |

* = Outside of Control Limits.

6.2.2

# Blank Spike Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4888-BS | G122984.D | 1 | 12/18/12 | JM | n/a | n/a | MSG4888 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-5

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 50.9 | 102 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 51.3 | 103 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 172 | 69* a | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 42.1 | 84 | 77-137 |
| 100-41-4 | Ethylbenzene | 50 | 55.0 | 110 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 55.2 | 110 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 53.3 | 107 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 56.5 | 113 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 60.3 | 121 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 47.0 | 94 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 37.0 | 74 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 43.5 | 87 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 53.8 | 108 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 38.6 | 77 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 56.8 | 114 | 70-130 |
| 100-42-5 | Styrene | 50 | 48.9 | 98 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 48.6 | 97 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 50.9 | 102 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 50.7 | 101 | 70-130 |
| 108-88-3 | Toluene | 50 | 54.7 | 109 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 42.6 | 85 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 47.4 | 95 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 59.2 | 118 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 46.1 | 92 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 52.1 | 104 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 57.0 | 114 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 46.7 | 93 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 60.0 | 120 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 60.1 | 120 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 43.1 | 86 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 62.7 | 125 | 70-130 |
| | m,p-Xylene | 100 | 109 | 109 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 53.2 | 106 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 162 | 108 | 70-130 |

* = Outside of Control Limits.

6.2.2

# Blank Spike Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4888-BS | G122984.D | 1 | 12/18/12 | JM | n/a | n/a | MSG4888 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-5

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 79% | 70-130% |
| 2037-26-5 | Toluene-D8 | 83% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 90% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2161-BS | K65704.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |
| MSK2161-BSD | K65705.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-1, MC16644-2, MC16644-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 2120 | 85 | 1900 | 76 | 11 | 70-130/25 |
| 107-02-8 | Acrolein | 12500 | ND | 0* a | ND | 0* a | nc | 70-130/25 |
| 107-13-1 | Acrylonitrile | 2500 | 2550 | 102 | 2460 | 98 | 4 | 70-130/25 |
| 71-43-2 | Benzene | 2500 | 2800 | 112 | 2640 | 106 | 6 | 70-130/25 |
| 108-86-1 | Bromobenzene | 2500 | 2480 | 99 | 2450 | 98 | 1 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 2500 | 2780 | 111 | 2640 | 106 | 5 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 2500 | 2770 | 111 | 2700 | 108 | 3 | 70-130/25 |
| 75-25-2 | Bromoform | 2500 | 2380 | 95 | 2600 | 104 | 9 | 70-130/25 |
| 74-83-9 | Bromomethane | 2500 | 3060 | 122 | 2980 | 119 | 3 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 2230 | 89 | 2020 | 81 | 10 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 2500 | 2620 | 105 | 2410 | 96 | 8 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2910 | 116 | 2650 | 106 | 9 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2970 | 119 | 2640 | 106 | 12 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 2500 | 3020 | 121 | 2970 | 119 | 2 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2840 | 114 | 2800 | 112 | 1 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 2500 | 2710 | 108 | 2810 | 112 | 4 | 70-130/25 |
| 75-00-3 | Chloroethane | 2500 | 3080 | 123 | 3210 | 128 | 4 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 752 | 30 | 710 | 28 | 6 | 10-160/25 |
| 67-66-3 | Chloroform | 2500 | 3050 | 122 | 2910 | 116 | 5 | 70-130/25 |
| 74-87-3 | Chloromethane | 2500 | 3270 | 131* b | 2790 | 112 | 16 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2850 | 114 | 2580 | 103 | 10 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2990 | 120 | 2670 | 107 | 11 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 2500 | 2520 | 101 | 2690 | 108 | 7 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2620 | 105 | 2560 | 102 | 2 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2700 | 108 | 2640 | 106 | 2 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2480 | 99 | 2400 | 96 | 3 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 1950 | 78 | 1770 | 71 | 10 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 3060 | 122 | 2950 | 118 | 4 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2720 | 109 | 2630 | 105 | 3 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 3110 | 124 | 3030 | 121 | 3 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2910 | 116 | 2860 | 114 | 2 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2880 | 115 | 2820 | 113 | 2 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2640 | 106 | 2600 | 104 | 2 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2490 | 100 | 2600 | 104 | 4 | 70-130/25 |
| 594-20-7 | 2,2-Dichloropropane | 2500 | 3110 | 124 | 2950 | 118 | 5 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2960 | 118 | 2750 | 110 | 7 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2161-BS | K65704.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |
| MSK2161-BSD | K65705.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-1, MC16644-2, MC16644-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2680 | 107 | 2610 | 104 | 3 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2810 | 112 | 2790 | 112 | 1 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 12500 | 13700 | 110 | 11000 | 88 | 22 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2460 | 98 | 2410 | 96 | 2 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 2500 | 2690 | 108 | 2630 | 105 | 2 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2720 | 109 | 2540 | 102 | 7 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 2500 | 1840 | 74 | 1880 | 75 | 2 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 2500 | 2920 | 117 | 2690 | 108 | 8 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2750 | 110 | 2600 | 104 | 6 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2880 | 115 | 2800 | 112 | 3 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 2180 | 87 | 2120 | 85 | 3 | 70-130/25 |
| 74-95-3 | Methylene bromide | 2500 | 2670 | 107 | 2560 | 102 | 4 | 70-130/25 |
| 75-09-2 | Methylene chloride | 2500 | 3000 | 120 | 2950 | 118 | 2 | 70-130/25 |
| 91-20-3 | Naphthalene | 2500 | 2230 | 89 | 2120 | 85 | 5 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 2500 | 2920 | 117 | 2610 | 104 | 11 | 70-130/25 |
| 100-42-5 | Styrene | 2500 | 2550 | 102 | 2560 | 102 | 0 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2550 | 102 | 2790 | 112 | 9 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2470 | 99 | 2160 | 86 | 13 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 2500 | 2550 | 102 | 2670 | 107 | 5 | 70-130/25 |
| 108-88-3 | Toluene | 2500 | 2750 | 110 | 2680 | 107 | 3 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 2280 | 91 | 2190 | 88 | 4 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2410 | 96 | 2290 | 92 | 5 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 3110 | 124 | 2950 | 118 | 5 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2560 | 102 | 2540 | 102 | 1 | 70-130/25 |
| 79-01-6 | Trichloroethene | 2500 | 2730 | 109 | 2700 | 108 | 1 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2980 | 119 | 2910 | 116 | 2 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2430 | 97 | 2170 | 87 | 11 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2680 | 107 | 2480 | 99 | 8 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2620 | 105 | 2430 | 97 | 8 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 2500 | 2550 | 102 | 2420 | 97 | 5 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 2500 | 2320 | 93 | 2370 | 95 | 2 | 70-130/25 |
| | m,p-Xylene | 5000 | 5550 | 111 | 5590 | 112 | 1 | 70-130/25 |
| 95-47-6 | o-Xylene | 2500 | 2830 | 113 | 2910 | 116 | 3 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 7500 | 8380 | 112 | 8500 | 113 | 1 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2161-BS | K65704.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |
| MSK2161-BSD | K65705.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-1, MC16644-2, MC16644-3

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 125% | 118% | 70-130% |
| 2037-26-5 | Toluene-D8 | 115% | 112% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 110% | 98% | 70-130% |

(a) Outside control limits due to standard degradation. Refer to Continuing Calibration.
(b) Outside control limits. Blank Spike meets program technical requirements.

6.3.1

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16644-2MS | K65724.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |
| MC16644-2MSD | K65725.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |
| MC16644-2 | K65710.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-1, MC16644-2, MC16644-3

| CAS No. | Compound | MC16644-2 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 5700 | 5170 | 91 | 4940 | 87 | 5 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 28500 | 7710 | 27* a | 7620 | 27* a | 1 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 5700 | 5240 | 92 | 5310 | 93 | 1 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 5700 | 5660 | 99 | 5830 | 102 | 3 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 5700 | 5400 | 95 | 5390 | 95 | 0 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 5700 | 5950 | 104 | 6150 | 108 | 3 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 5700 | 5990 | 105 | 6040 | 106 | 1 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 5700 | 6180 | 108 | 6100 | 107 | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 5700 | 6760 | 119 | 7150 | 125 | 6 | 70-130/30 |
| 78-93-3 | 2-Bntanone (MEK) | ND | | 5700 | 5540 | 97 | 5310 | 93 | 4 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | 116 | J | 5700 | 5540 | 95 | 5680 | 98 | 2 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | 60.0 | J | 5700 | 6180 | 107 | 6400 | 111 | 3 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 5700 | 6300 | 111 | 6460 | 113 | 3 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 5700 | 5970 | 105 | 6210 | 109 | 4 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 5700 | 6320 | 111 | 6680 | 117 | 6 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 5700 | 6520 | 114 | 6610 | 116 | 1 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 5700 | 5640 | 99 | 6340 | 111 | 12 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 5700 | 4910 | 86 | 5000 | 88 | 2 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 5700 | 6140 | 108 | 6160 | 108 | 0 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 5700 | 7450 | 131* b | 7860 | 138* b | 5 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 5700 | 6010 | 105 | 6080 | 107 | 1 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 5700 | 6020 | 106 | 6070 | 106 | 1 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 5700 | 6140 | 108 | 6120 | 107 | 0 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 5700 | 5940 | 104 | 6030 | 106 | 2 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 5700 | 5850 | 103 | 5990 | 105 | 2 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 5700 | 5150 | 90 | 5230 | 92 | 2 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 5700 | 7110 | 125 | 7450 | 131* b | 5 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 5700 | 5810 | 102 | 5820 | 102 | 0 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 5700 | 5740 | 101 | 5750 | 101 | 0 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 5700 | 6070 | 106 | 6320 | 111 | 4 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroetheue | ND | | 5700 | 5920 | 104 | 5940 | 104 | 0 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 5700 | 5930 | 104 | 6000 | 105 | 1 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 5700 | 5410 | 95 | 5700 | 100 | 5 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 5700 | 5490 | 96 | 5480 | 96 | 0 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 5700 | 5730 | 101 | 5750 | 101 | 0 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 5700 | 5670 | 99 | 5890 | 103 | 4 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16644-2MS | K65724.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |
| MC16644-2MSD | K65725.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |
| MC16644-2 | K65710.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-1, MC16644-2, MC16644-3

| CAS No. | Compound | MC16644-2 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 5700 | 5830 | 102 | 5880 | 103 | 1 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 5700 | 5680 | 100 | 5860 | 103 | 3 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 28500 | 28500 | 100 | 27100 | 95 | 5 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 5700 | 5440 | 95 | 5510 | 97 | 1 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 5700 | 5930 | 104 | 5960 | 105 | 1 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 5700 | 5900 | 104 | 6060 | 106 | 3 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 5700 | 5060 | 89 | 4770 | 84 | 6 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 5700 | 6200 | 109 | 6350 | 111 | 2 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 5700 | 5520 | 97 | 5670 | 99 | 3 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 5700 | 5970 | 105 | 5990 | 105 | 0 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 5700 | 4900 | 86 | 5080 | 89 | 4 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 5700 | 5690 | 100 | 5850 | 103 | 3 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 5700 | 6030 | 106 | 6140 | 108 | 2 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 5700 | 5040 | 88 | 4880 | 86 | 3 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 5700 | 6170 | 108 | 6240 | 109 | 1 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 5700 | 5870 | 103 | 5900 | 104 | 1 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 5700 | 6140 | 108 | 6280 | 110 | 2 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 5700 | 5070 | 89 | 4960 | 87 | 2 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 5700 | 5900 | 104 | 6050 | 106 | 3 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 5700 | 5860 | 103 | 6110 | 107 | 4 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 5700 | 4820 | 85 | 4950 | 87 | 3 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 5700 | 4920 | 86 | 4950 | 87 | 1 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 5700 | 6310 | 111 | 6580 | 115 | 4 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 5700 | 5610 | 98 | 5680 | 100 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 5700 | 5940 | 104 | 6140 | 108 | 3 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 5700 | 6450 | 113 | 6770 | 119 | 5 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 5700 | 4910 | 86 | 4780 | 84 | 3 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 5700 | 5620 | 99 | 5680 | 100 | 1 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 5700 | 5520 | 97 | 5600 | 98 | 1 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 5700 | 5380 | 94 | 5270 | 92 | 2 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 5700 | 6750 | 118 | 7470 | 131* b | 10 | 70-130/30 |
| | m,p-Xylene | ND | | 11400 | 12800 | 112 | 12900 | 113 | 1 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 5700 | 6660 | 117 | 6790 | 119 | 2 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 17100 | 19500 | 114 | 19700 | 115 | 1 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16644-2MS | K65724.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |
| MC16644-2MSD | K65725.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |
| MC16644-2 | K65710.D | 1 | 12/14/12 | GK | n/a | n/a | MSK2161 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-1, MC16644-2, MC16644-3

| CAS No. | Surrogate Recoveries | MS | MSD | MC16644-2 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 113% | 115% | 118% | 70-130% |
| 2037-26-5 | Toluene-D8 | 108% | 113% | 110% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | 100% | 101% | 70-130% |

(a) Ontside control limits due to possible matrix interference.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16639-13MS | M52952.D | 1 | 12/17/12 | AMY | n/a | n/a | MSM1796 |
| MC16639-13MSD | M52953.D | 1 | 12/17/12 | AMY | n/a | n/a | MSM1796 |
| MC16639-13 | M52947.D | 1 | 12/17/12 | AMY | n/a | n/a | MSM1796 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-4

| CAS No. | Compound | MC16639-13 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 94.2 | 337 | 358* [a] | 252 | 330* [a] | 29 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 471 | 210 | 45* [a] | 181 | 47* [a] | 15 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 94.2 | 88.4 | 94 | 67.0 | 88 | 28 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 94.2 | 94.9 | 101 | 74.5 | 97 | 24 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 94.2 | 82.9 | 88 | 64.5 | 84 | 25 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 94.2 | 85.0 | 90 | 68.9 | 90 | 21 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 94.2 | 84.7 | 90 | 70.0 | 92 | 19 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 94.2 | 88.3 | 94 | 69.3 | 91 | 24 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 94.2 | 89.4 | 95 | 72.1 | 94 | 21 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 94.2 | 83.1 | 88 | 64.0 | 84 | 26 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 94.2 | 79.5 | 84 | 63.5 | 83 | 22 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 94.2 | 85.1 | 90 | 66.7 | 87 | 24 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 94.2 | 85.0 | 90 | 66.2 | 87 | 25 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 94.2 | 87.8 | 93 | 71.0 | 93 | 21 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 94.2 | 97.8 | 104 | 77.2 | 101 | 24 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 94.2 | 83.6 | 89 | 68.7 | 90 | 20 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 94.2 | 80.8 | 86 | 70.1 | 92 | 14 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 94.2 | 77.9 | 83 | 71.4 | 93 | 9 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 94.2 | 85.6 | 91 | 67.0 | 88 | 24 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 94.2 | 98.3 | 104 | 78.4 | 103 | 23 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 94.2 | 76.8 | 81 | 60.2 | 79 | 24 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 94.2 | 77.1 | 82 | 61.7 | 81 | 22 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 94.2 | 88.4 | 94 | 75.2 | 98 | 16 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 94.2 | 67.3 | 71 | 50.9 | 67* [a] | 28 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 94.2 | 73.1 | 78 | 56.4 | 74 | 26 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 94.2 | 74.0 | 79 | 56.3 | 74 | 27 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 94.2 | 123 | 131* [a] | 99.6 | 130 | 21 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 94.2 | 85.4 | 91 | 66.2 | 87 | 25 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 94.2 | 85.3 | 91 | 61.4 | 80 | 33* [b] | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 94.2 | 96.5 | 102 | 77.0 | 101 | 22 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 94.2 | 84.1 | 89 | 67.9 | 89 | 21 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 94.2 | 89.8 | 95 | 71.6 | 94 | 23 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 94.2 | 80.3 | 85 | 66.4 | 87 | 19 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 94.2 | 83.5 | 89 | 72.4 | 95 | 14 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 94.2 | 90.2 | 96 | 70.7 | 93 | 24 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 94.2 | 101 | 107 | 75.9 | 99 | 28 | 70-130/30 |

* = Outside of Control Limits.

6.4.2

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16639-13MS | M52952.D | 1 | 12/17/12 | AMY | n/a | n/a | MSM1796 |
| MC16639-13MSD | M52953.D | 1 | 12/17/12 | AMY | n/a | n/a | MSM1796 |
| MC16639-13 | M52947.D | 1 | 12/17/12 | AMY | n/a | n/a | MSM1796 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-4

| CAS No. | Compound | MC16639-13 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 94.2 | 79.1 | 84 | 65.1 | 85 | 19 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 94.2 | 87.3 | 93 | 69.7 | 91 | 22 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 471 | 517 | 110 | 400 | 105 | 26 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 94.2 | 92.0 | 98 | 73.3 | 96 | 23 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 94.2 | 96.9 | 103 | 79.1 | 104 | 20 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 94.2 | 82.2 | 87 | 67.9 | 89 | 19 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 94.2 | 84.2 | 89 | 71.6 | 94 | 16 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 94.2 | 89.4 | 95 | 68.8 | 90 | 26 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 94.2 | 89.7 | 95 | 71.0 | 93 | 23 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 94.2 | 100 | 106 | 76.2 | 100 | 27 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 94.2 | 90.7 | 96 | 71.6 | 94 | 24 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 94.2 | 85.7 | 91 | 69.3 | 91 | 21 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 94.2 | 75.8 | 80 | 63.5 | 83 | 18 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 94.2 | 62.5 | 66* [a] | 44.5 | 58* [a] | 34* [b] | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 94.2 | 84.9 | 90 | 66.1 | 87 | 25 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 94.2 | 54.8 | 58* [a] | 49.0 | 64* [a] | 11 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 94.2 | 87.2 | 93 | 70.3 | 92 | 21 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 94.2 | 85.5 | 91 | 58.3 | 76 | 38* [b] | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 94.2 | 105 | 111 | 87.7 | 115 | 18 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 94.2 | 106 | 112 | 85.1 | 111 | 22 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 94.2 | 57.4 | 61* [a] | 41.6 | 54* [a] | 32* [b] | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 94.2 | 63.8 | 68* [a] | 46.6 | 61* [a] | 31* [b] | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 94.2 | 92.1 | 98 | 71.5 | 94 | 25 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 94.2 | 84.8 | 90 | 67.4 | 88 | 23 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 94.2 | 93.2 | 99 | 75.3 | 99 | 21 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 94.2 | 94.1 | 100 | 79.8 | 104 | 16 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 94.2 | 91.5 | 97 | 62.9 | 82 | 37* [b] | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 94.2 | 85.9 | 91 | 65.8 | 86 | 26 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 94.2 | 84.8 | 90 | 67.5 | 88 | 23 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 94.2 | 74.5 | 79 | 54.2 | 71 | 32* [b] | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 94.2 | 91.5 | 97 | 71.0 | 93 | 25 | 70-130/30 |
| | m,p-Xylene | ND | | 188 | 190 | 101 | 155 | 101 | 20 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 94.2 | 91.0 | 97 | 71.7 | 94 | 24 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 283 | 281 | 99 | 226 | 99 | 22 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16639-13MS | M52952.D | 1 | 12/17/12 | AMY | n/a | n/a | MSM1796 |
| MC16639-13MSD | M52953.D | 1 | 12/17/12 | AMY | n/a | n/a | MSM1796 |
| MC16639-13 | M52947.D | 1 | 12/17/12 | AMY | n/a | n/a | MSM1796 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-4

| CAS No. | Surrogate Recoveries | MS | MSD | MC16639-13 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 93% | 92% | 91% | 70-130% |
| 2037-26-5 | Toluene-D8 | 109% | 112% | 110% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | 91% | 90% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) High RPD due to possible matrix interference and/or sample non-homogeneity.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16643-8MS | G122997.D | 5 | 12/18/12 | JM | n/a | n/a | MSG4888 |
| MC16643-8MSD | G122998.D | 5 | 12/18/12 | JM | n/a | n/a | MSG4888 |
| MC16643-8 | G122996.D | 1 | 12/18/12 | JM | n/a | n/a | MSG4888 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-5

| CAS No. | Compound | MC16643-8 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 250 | 191 | 76 | 174 | 70 | 9 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 1250 | 464 | 37* a | 467 | 37* a | 1 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 250 | 201 | 80 | 199 | 80 | 1 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 250 | 298 | 119 | 294 | 118 | 1 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 250 | 277 | 111 | 272 | 109 | 2 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 250 | 240 | 96 | 234 | 94 | 3 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 250 | 259 | 104 | 256 | 102 | 1 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 250 | 173 | 69* a | 172 | 69* a | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 250 | 283 | 113 | 277 | 111 | 2 | 70-130/30 |
| 78-93-3 | 2-Bntanone (MEK) | ND | | 250 | 201 | 80 | 202 | 81 | 0 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 250 | 303 | 121 | 294 | 118 | 3 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 250 | 292 | 117 | 287 | 115 | 2 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 250 | 286 | 114 | 279 | 112 | 2 | 70-130/30 |
| 75-15-0 | Carbon disnlfide | ND | | 250 | 258 | 103 | 250 | 100 | 3 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 250 | 281 | 112 | 275 | 110 | 2 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 250 | 260 | 104 | 256 | 102 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 250 | 305 | 122 | 303 | 121 | 1 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 250 | ND | 0* a | ND | 0* a | nc | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 250 | 284 | 114 | 280 | 112 | 1 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 250 | 369 | 148* a | 386 | 154* a | 5 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 250 | 289 | 116 | 284 | 114 | 2 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 250 | 304 | 122 | 297 | 119 | 2 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 250 | 220 | 88 | 217 | 87 | 1 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 250 | 255 | 102 | 255 | 102 | 0 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 250 | 275 | 110 | 270 | 108 | 2 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 250 | 285 | 114 | 275 | 110 | 4 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 250 | 468 | 187* a | 466 | 186* a | 0 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 250 | 310 | 124 | 308 | 123 | 1 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 250 | 245 | 98 | 240 | 96 | 2 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 250 | 302 | 121 | 297 | 119 | 2 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 250 | 285 | 114 | 284 | 114 | 0 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 250 | 292 | 117 | 289 | 116 | 1 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 250 | 286 | 114 | 278 | 111 | 3 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 250 | 239 | 96 | 233 | 93 | 3 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 250 | 371 | 148* a | 363 | 145* a | 2 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 250 | 292 | 117 | 287 | 115 | 2 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16643-8MS | G122997.D | 5 | 12/18/12 | JM | n/a | n/a | MSG4888 |
| MC16643-8MSD | G122998.D | 5 | 12/18/12 | JM | n/a | n/a | MSG4888 |
| MC16643-8 | G122996.D | 1 | 12/18/12 | JM | n/a | n/a | MSG4888 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-5

| CAS No. | Compound | MC16643-8 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 250 | 264 | 106 | 259 | 104 | 2 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 250 | 260 | 104 | 256 | 102 | 2 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 1250 | 1040 | 83 | 936 | 75 | 11 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 250 | 203 | 81 | 202 | 81 | 0 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 250 | 285 | 114 | 281 | 112 | 1 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 250 | 287 | 115 | 284 | 114 | 1 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 250 | 202 | 81 | 206 | 82 | 2 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 250 | 295 | 118 | 289 | 116 | 2 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 250 | 308 | 123 | 301 | 120 | 2 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 250 | 241 | 96 | 238 | 95 | 1 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 250 | 135 | 54* [a] | 136 | 54* [a] | 1 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 250 | 226 | 90 | 218 | 87 | 4 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 250 | 277 | 111 | 276 | 110 | 0 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 250 | 175 | 70 | 182 | 73 | 4 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 250 | 294 | 118 | 286 | 114 | 3 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 250 | 208 | 83 | 205 | 82 | 1 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 250 | 254 | 102 | 251 | 100 | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 250 | 258 | 103 | 256 | 102 | 1 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 250 | 271 | 108 | 260 | 104 | 4 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 250 | 284 | 114 | 280 | 112 | 1 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 250 | 197 | 79 | 205 | 82 | 4 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 250 | 226 | 90 | 227 | 91 | 0 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 250 | 311 | 124 | 304 | 122 | 2 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 250 | 239 | 96 | 236 | 94 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 250 | 278 | 111 | 272 | 109 | 2 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 250 | 301 | 120 | 293 | 117 | 3 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 250 | 242 | 97 | 239 | 96 | 1 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 250 | 283 | 113 | 274 | 110 | 3 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 250 | 293 | 117 | 287 | 115 | 2 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 250 | 214 | 86 | 216 | 86 | 1 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 250 | 336 | 134* [a] | 329 | 132* [a] | 2 | 70-130/30 |
| | m,p-Xylene | ND | | 500 | 551 | 110 | 543 | 109 | 1 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 250 | 269 | 108 | 267 | 107 | 1 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 750 | 820 | 109 | 811 | 108 | 1 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16643-8MS | G122997.D | 5 | 12/18/12 | JM | n/a | n/a | MSG4888 |
| MC16643-8MSD | G122998.D | 5 | 12/18/12 | JM | n/a | n/a | MSG4888 |
| MC16643-8 | G122996.D | 1 | 12/18/12 | JM | n/a | n/a | MSG4888 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16644-5

| CAS No. | Surrogate Recoveries | MS | MSD | MC16643-8 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 78% | 78% | 78% | 70-130% |
| 2037-26-5 | Toluene-D8 | 83% | 84% | 82% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 90% | 90% | 93% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

* = Outside of Control Limits.

# Volatile Internal Standard Area Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSG4888-CC4862 | Injection Date: | 12/18/12 |
| Lab File ID: | G122983.D | Injection Time: | 09:27 |
| Instrument ID: | GCMSG | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 290449 | 5.13 | 378350 | 6.27 | 166690 | 9.62 | 183927 | 12.25 | 33812 | 3.09 |
| Upper Limit [a] | 580898 | 5.63 | 756700 | 6.77 | 333380 | 10.12 | 367854 | 12.75 | 67624 | 3.59 |
| Lower Limit [b] | 145225 | 4.63 | 189175 | 5.77 | 83345 | 9.12 | 91964 | 11.75 | 16906 | 2.59 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSG4888-BS | 291713 | 5.13 | 379250 | 6.27 | 167016 | 9.62 | 186481 | 12.25 | 33609 | 3.09 |
| MSG4888-MB | 292436 | 5.14 | 379524 | 6.27 | 166278 | 9.62 | 179552 | 12.25 | 36183 | 3.09 |
| ZZZZZZ | 291132 | 5.14 | 377565 | 6.27 | 165679 | 9.62 | 172028 | 12.25 | 31001 | 3.09 |
| ZZZZZZ | 295494 | 5.13 | 386369 | 6.27 | 170536 | 9.62 | 181170 | 12.25 | 37412 | 3.09 |
| MC16644-5 | 291382 | 5.14 | 378866 | 6.27 | 167402 | 9.62 | 180745 | 12.25 | 37553 | 3.09 |
| ZZZZZZ | 291726 | 5.14 | 380909 | 6.27 | 166339 | 9.62 | 179833 | 12.25 | 39582 | 3.09 |
| ZZZZZZ | 290809 | 5.14 | 375691 | 6.27 | 164787 | 9.62 | 176924 | 12.25 | 39859 | 3.09 |
| ZZZZZZ | 290141 | 5.13 | 374591 | 6.27 | 167100 | 9.62 | 177362 | 12.25 | 39164 | 3.09 |
| ZZZZZZ | 291689 | 5.14 | 381074 | 6.27 | 165971 | 9.62 | 178333 | 12.25 | 39921 | 3.09 |
| ZZZZZZ | 289326 | 5.14 | 370199 | 6.27 | 164437 | 9.62 | 175788 | 12.25 | 38614 | 3.09 |
| MC16643-8 | 294562 | 5.14 | 383079 | 6.27 | 166531 | 9.62 | 174876 | 12.25 | 36546 | 3.09 |
| MC16643-8MS | 294714 | 5.13 | 380545 | 6.27 | 167578 | 9.62 | 184368 | 12.25 | 37055 | 3.09 |
| MC16643-8MSD | 292342 | 5.14 | 378118 | 6.27 | 166891 | 9.62 | 185102 | 12.25 | 36409 | 3.09 |
| ZZZZZZ | 289713 | 5.13 | 378161 | 6.27 | 165718 | 9.62 | 174662 | 12.25 | 35601 | 3.09 |
| ZZZZZZ | 288415 | 5.14 | 374591 | 6.27 | 165018 | 9.62 | 169570 | 12.25 | 34268 | 3.09 |
| ZZZZZZ | 300393 | 5.14 | 387702 | 6.27 | 166185 | 9.62 | 171057 | 12.25 | 34974 | 3.09 |
| ZZZZZZ | 301241 | 5.14 | 392408 | 6.27 | 167843 | 9.62 | 174484 | 12.25 | 34772 | 3.09 |
| ZZZZZZ | 300944 | 5.13 | 388757 | 6.27 | 170047 | 9.62 | 175464 | 12.25 | 33764 | 3.09 |
| ZZZZZZ | 286041 | 5.14 | 356835 | 6.27 | 153908 | 9.62 | 161892 | 12.25 | 30328 | 3.09 |
| ZZZZZZ | 288457 | 5.13 | 360253 | 6.27 | 156229 | 9.62 | 162346 | 12.25 | 31156 | 3.09 |
| ZZZZZZ | 289245 | 5.13 | 371625 | 6.27 | 159863 | 9.62 | 167521 | 12.25 | 31410 | 3.09 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSK2161-CC2132 | Injection Date: | 12/14/12 |
| Lab File ID: | K65703.D | Injection Time: | 07:48 |
| Instrument ID: | GCMSK | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 108586 | 8.81 | 188387 | 9.66 | 98053 | 12.93 | 105299 | 15.49 | 33780 | 6.43 |
| Upper Limit [a] | 217172 | 9.31 | 376774 | 10.16 | 196106 | 13.43 | 210598 | 15.99 | 67560 | 6.93 |
| Lower Limit [b] | 54293 | 8.31 | 94194 | 9.16 | 49027 | 12.43 | 52650 | 14.99 | 16890 | 5.93 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSK2161-BS | 103942 | 8.81 | 180092 | 9.66 | 94882 | 12.93 | 101478 | 15.49 | 28611 | 6.42 |
| MSK2161-BSD | 107069 | 8.82 | 181640 | 9.67 | 89949 | 12.93 | 107186 | 15.49 | 26193 | 6.42 |
| MSK2161-MB | 106268 | 8.82 | 182309 | 9.67 | 86179 | 12.93 | 108782 | 15.49 | 21245 | 6.41 |
| ZZZZZZ | 109604 | 8.82 | 179356 | 9.67 | 88212 | 12.93 | 103946 | 15.49 | 21277 | 6.41 |
| MC16644-1 | 110609 | 8.82 | 190188 | 9.67 | 91869 | 12.93 | 112910 | 15.49 | 25807 | 6.42 |
| MC16644-2 | 118223 | 8.82 | 193245 | 9.67 | 93160 | 12.93 | 115226 | 15.49 | 24128 | 6.41 |
| MC16644-3 | 119313 | 8.82 | 193974 | 9.67 | 93050 | 12.93 | 114213 | 15.49 | 23779 | 6.42 |
| ZZZZZZ | 118500 | 8.81 | 191085 | 9.66 | 85232 | 12.93 | 108202 | 15.49 | 26111 | 6.43 |
| ZZZZZZ | 120256 | 8.81 | 184836 | 9.66 | 82961 | 12.93 | 114528 | 15.49 | 26560 | 6.43 |
| ZZZZZZ | 128186 | 8.82 | 192353 | 9.67 | 95228 | 12.93 | 111329 | 15.49 | 30215 | 6.42 |
| ZZZZZZ | 119445 | 8.82 | 196836 | 9.67 | 97045 | 12.93 | 121259 | 15.49 | 28957 | 6.45 |
| ZZZZZZ | 119169 | 8.82 | 184991 | 9.67 | 90383 | 12.93 | 112147 | 15.49 | 30369 | 6.44 |
| ZZZZZZ | 117752 | 8.81 | 192051 | 9.66 | 95477 | 12.93 | 117384 | 15.49 | 29018 | 6.44 |
| ZZZZZZ | 114428 | 8.82 | 190773 | 9.67 | 94413 | 12.93 | 117953 | 15.49 | 30309 | 6.42 |
| ZZZZZZ | 113906 | 8.82 | 186617 | 9.67 | 94428 | 12.93 | 114882 | 15.49 | 28149 | 6.41 |
| ZZZZZZ | 114924 | 8.82 | 183315 | 9.67 | 92864 | 12.93 | 112739 | 15.49 | 28925 | 6.41 |
| ZZZZZZ | 117425 | 8.82 | 191381 | 9.67 | 96508 | 12.93 | 119842 | 15.49 | 27011 | 6.41 |
| ZZZZZZ | 113160 | 8.82 | 190887 | 9.67 | 95725 | 12.93 | 118990 | 15.49 | 28480 | 6.42 |
| MC16644-2MS | 110329 | 8.82 | 181423 | 9.67 | 92639 | 12.93 | 111120 | 15.49 | 27560 | 6.42 |
| MC16644-2MSD | 110353 | 8.82 | 178580 | 9.67 | 92739 | 12.93 | 112152 | 15.49 | 26659 | 6.42 |
| ZZZZZZ | 113372 | 8.82 | 188503 | 9.67 | 96587 | 12.93 | 118479 | 15.49 | 29899 | 6.41 |
| ZZZZZZ | 112397 | 8.81 | 188413 | 9.66 | 95285 | 12.93 | 108879 | 15.49 | 29790 | 6.41 |
| ZZZZZZ | 116096 | 8.82 | 193736 | 9.67 | 96136 | 12.93 | 117642 | 15.49 | 33917 | 6.45 |
| ZZZZZZ | 111174 | 8.82 | 185569 | 9.67 | 93354 | 12.93 | 111884 | 15.49 | 20657 | 6.42 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1796-CC1784 | Injection Date: | 12/17/12 |
| Lab File ID: | M52938.D | Injection Time: | 08:56 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 221844 | 9.36 | 335814 | 10.24 | 172291 | 13.52 | 182419 | 16.08 | 59340 | 6.86 |
| Upper Limit [a] | 443688 | 9.86 | 671628 | 10.74 | 344582 | 14.02 | 364838 | 16.58 | 118680 | 7.36 |
| Lower Limit [b] | 110922 | 8.86 | 167907 | 9.74 | 86146 | 13.02 | 91210 | 15.58 | 29670 | 6.36 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1796-BS | 212032 | 9.36 | 308390 | 10.24 | 167395 | 13.52 | 169149 | 16.08 | 54558 | 6.86 |
| MSM1796-MB | 199718 | 9.36 | 284728 | 10.24 | 147389 | 13.52 | 160889 | 16.08 | 56945 | 6.86 |
| MC16644-4 | 187633 | 9.36 | 268188 | 10.24 | 144851 | 13.52 | 155599 | 16.08 | 91058 | 6.86 |
| ZZZZZZ | 193919 | 9.36 | 282567 | 10.24 | 141686 | 13.52 | 165698 | 16.08 | 60922 | 6.86 |
| ZZZZZZ | 205897 | 9.36 | 305961 | 10.24 | 138633 | 13.52 | 163105 | 16.08 | 60141 | 6.86 |
| ZZZZZZ | 212663 | 9.36 | 311279 | 10.24 | 156281 | 13.52 | 147686 | 16.08 | 61249 | 6.86 |
| MC16639-13 | 211857 | 9.36 | 303270 | 10.24 | 153242 | 13.52 | 173641 | 16.08 | 55912 | 6.86 |
| ZZZZZZ | 212439 | 9.36 | 303253 | 10.24 | 144809 | 13.52 | 173942 | 16.08 | 54171 | 6.85 |
| ZZZZZZ | 213361 | 9.36 | 313295 | 10.24 | 144569 | 13.52 | 167400 | 16.09 | 31605 | 6.86 |
| ZZZZZZ | 215463 | 9.36 | 309467 | 10.24 | 158123 | 13.52 | 174023 | 16.08 | 59129 | 6.86 |
| ZZZZZZ | 208711 | 9.36 | 302749 | 10.24 | 154053 | 13.52 | 153989 | 16.08 | 65138 | 6.86 |
| MC16639-13MS | 193721 | 9.36 | 270918 | 10.24 | 148016 | 13.52 | 150124 | 16.08 | 111350 | 6.86 |
| MC16639-13MSD | 198282 | 9.36 | 297546 | 10.24 | 149121 | 13.52 | 159871 | 16.08 | 105111 | 6.85 |
| ZZZZZZ | 202856 | 9.36 | 288911 | 10.24 | 147116 | 13.52 | 165716 | 16.08 | 53706 | 6.86 |
| ZZZZZZ | 209459 | 9.36 | 288383 | 10.24 | 150690 | 13.52 | 164946 | 16.08 | 47725 | 6.86 |
| ZZZZZZ | 211259 | 9.36 | 288215 | 10.24 | 153563 | 13.52 | 173947 | 16.08 | 55690 | 6.86 |
| ZZZZZZ | 212822 | 9.36 | 301844 | 10.24 | 153073 | 13.52 | 166602 | 16.08 | 52160 | 6.86 |
| ZZZZZZ | 208772 | 9.36 | 302388 | 10.24 | 147101 | 13.52 | 169781 | 16.08 | 55186 | 6.86 |
| ZZZZZZ | 208227 | 9.36 | 298635 | 10.24 | 139964 | 13.52 | 160799 | 16.08 | 51976 | 6.86 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Surrogate Recovery Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC16644-5 | G122990.D | 78.0 | 84.0 | 91.0 |
| MC16643-8MS | G122997.D | 78.0 | 83.0 | 90.0 |
| MC16643-8MSD | G122998.D | 78.0 | 84.0 | 90.0 |
| MSG4888-BS | G122984.D | 79.0 | 83.0 | 90.0 |
| MSG4888-MB | G122987.D | 79.0 | 84.0 | 91.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC16644-1 | K65709.D | 129.0 | 113.0 | 102.0 |
| MC16644-2 | K65710.D | 118.0 | 110.0 | 101.0 |
| MC16644-3 | K65711.D | 118.0 | 112.0 | 111.0 |
| MC16644-4 | M52943.D | 91.0 | 119.0 | 93.0 |
| MC16639-13MS | M52952.D | 93.0 | 109.0 | 97.0 |
| MC16639-13MSD | M52953.D | 92.0 | 112.0 | 91.0 |
| MC16644-2MS | K65724.D | 113.0 | 108.0 | 96.0 |
| MC16644-2MSD | K65725.D | 115.0 | 113.0 | 100.0 |
| MSK2161-BS | K65704.D | 125.0 | 115.0 | 110.0 |
| MSK2161-BSD | K65705.D | 118.0 | 112.0 | 98.0 |
| MSK2161-MB | K65707.D | 128.0 | 110.0 | 99.0 |
| MSM1796-BS | M52939.D | 94.0 | 118.0 | 89.0 |
| MSM1796-MB | M52942.D | 93.0 | 111.0 | 89.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

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## GC Volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31406-MB | BK19937.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16644-5



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.015 | 0.013 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.015 | 0.010 | ug/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 95% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 100% | 36-173% |

# Method Blank Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31434-MB | BK20055.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16644-1, MC16644-2, MC16644-3, MC16644-4



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 2.4 | 1.1 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.4 | 0.94 | ug/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 148% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 150% | 61-167% |

# Blank Spike Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31406-BS | BK19938.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16644-5

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 0.071 | 0.067 | 94 | 60-140 |
| 106-93-4 | 1,2-Dibromoethane | 0.071 | 0.071 | 100 | 60-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 96% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 104% | 36-173% |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31434-BS | BK20056.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16644-1, MC16644-2, MC16644-3, MC16644-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 33 | 46.0 | 139 | 59-142 |
| 106-93-4 | 1,2-Dibromoethane | 33 | 43.8 | 133 | 56-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 143% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 142% | 61-167% |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31406-MS | BK19941.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |
| OP31406-MSD | BK19942.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |
| MC16600-6 | BK19943.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16644-5

| CAS No. | Compound | MC16600-6 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 0.071 | 0.066 | 93 | 0.064 | 90 | 3 | 64-141/29 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 0.071 | 0.072 | 101 | 0.067 | 94 | 7 | 63-163/27 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC16600-6 | Limits |
|---|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 100% | 100% | 99% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 110% | 108% | 107% | 36-173% |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31434-MS | BK20057.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |
| OP31434-MSD | BK20058.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |
| MC16644-1 | BK20059.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16644-1, MC16644-2, MCI6644-3, MC16644-4

7.3.2

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| CAS No. | Compound | MC16644-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 1 | 116 | 116 | 113 | 115 | 3 | 40-156/27 |
| I06-93-4 | 1,2-Dibromoethane | ND | | 1 | 132 | 132 | 128 | 131 | 2 | 48-141/27 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC16644-1 | Limits |
|---|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 124% | 128% | 166% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 130% | 130% | 156% | 61-167% |

* = Outside of Control Limits.

# Volatile Surrogate Recovery Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Method: SW846 8011 | Matrix: AQ |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] | S1 [b] |
|---|---|---|---|
| MC16644-5 | BK19946.D | 105.0 | 122.0 |
| OP31406-BS | BK19938.D | 96.0 | 104.0 |
| OP31406-MB | BK19937.D | 95.0 | 100.0 |
| OP31406-MS | BK19941.D | 100.0 | 110.0 |
| OP31406-MSD | BK19942.D | 100.0 | 108.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Bromofluorobenzene (S) | 36-173% |

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2

# Volatile Surrogate Recovery Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Method: SW846 8011 | Matrix: SO |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] | S1 [b] |
|---|---|---|---|
| MC16644-1 | BK20059.D | 166.0 | 156.0 |
| MC16644-2 | BK20060.D | 136.0 | 126.0 |
| MC16644-3 | BK20061.D | 132.0 | 124.0 |
| MC16644-4 | BK20062.D | 154.0 | 150.0 |
| OP31434-BS | BK20056.D | 143.0 | 142.0 |
| OP31434-MB | BK20055.D | 148.0 | 150.0 |
| OP31434-MS | BK20057.D | 124.0 | 130.0 |
| OP31434-MSD | BK20058.D | 128.0 | 130.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Bromofluorobenzene (S) | 61-167% |

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2

# GC Surrogate Retention Time Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBK716-ICC716 | Injection Date: | 12/13/12 |
| Lab File ID: | BK19932.D | Injection Time: | 18:03 |
| Instrument ID: | GCBK | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.85 | 4.52 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| ZZZZZZ | BK19935A.D | 12/13/12 | 19:16 | 4.85 | 4.52 |
| ZZZZZZ | BK19935B.D | 12/13/12 | 19:16 | 4.85 | 4.52 |
| OP31406-MB | BK19937.D | 12/13/12 | 20:04 | 4.85 | 4.52 |
| OP31405-MB | BK19937A.D | 12/13/12 | 20:04 | 4.85 | 4.52 |
| OP31406-BS | BK19938.D | 12/13/12 | 20:28 | 4.85 | 4.52 |
| OP31405-BS | BK19938A.D | 12/13/12 | 20:28 | 4.85 | 4.52 |
| OP31405-BSD | BK19939.D | 12/13/12 | 20:52 | 4.85 | 4.52 |
| ZZZZZZ | BK19940.D | 12/13/12 | 21:17 | 4.85 | 4.52 |
| OP31406-MS | BK19941.D | 12/13/12 | 21:41 | 4.85 | 4.52 |
| OP31406-MSD | BK19942.D | 12/13/12 | 22:06 | 4.85 | 4.52 |
| MC16600-6 | BK19943.D | 12/13/12 | 22:30 | 4.85 | 4.52 |
| ZZZZZZ | BK19944.D | 12/13/12 | 22:55 | 4.85 | 4.52 |
| ZZZZZZ | BK19945.D | 12/13/12 | 23:19 | 4.85 | 4.52 |
| MC16644-5 | BK19946.D | 12/13/12 | 23:43 | 4.85 | 4.52 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

# GC Surrogate Retention Time Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, 1L

| | | | |
|---|---|---|---|
| Check Std: | GBK720-ICC720 | Injection Date: | 12/16/12 |
| Lab File ID: | BK20049.D | Injection Time: | 14:38 |
| Instrument ID: | GCBK | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.78 | 4.45 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| OP31434-MB | BK20055.D | 12/16/12 | 17:05 | 4.78 | 4.45 |
| OP31434-BS | BK20056.D | 12/16/12 | 17:29 | 4.78 | 4.45 |
| OP31434-MS | BK20057.D | 12/16/12 | 17:54 | 4.78 | 4.45 |
| OP31434-MSD | BK20058.D | 12/16/12 | 18:19 | 4.78 | 4.45 |
| MC16644-1 | BK20059.D | 12/16/12 | 18:43 | 4.78 | 4.45 |
| MC16644-2 | BK20060.D | 12/16/12 | 19:08 | 4.78 | 4.45 |
| MC16644-3 | BK20061.D | 12/16/12 | 19:33 | 4.78 | 4.45 |
| MC16644-4 | BK20062.D | 12/16/12 | 19:58 | 4.78 | 4.45 |
| ZZZZZZ | BK20063.D | 12/16/12 | 20:22 | 4.78 | 4.45 |
| ZZZZZZ | BK20064.D | 12/16/12 | 20:47 | 4.78 | 4.45 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

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## General Chemistry

# QC Data Summaries

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Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC16644
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| **Sample:** MC16644-1 | **Analyzed:** 11-DEC-12 by MC | | **Method:** SM21 2540 B MOD. |
| ClientID: MW-21-21 | | | |
| Wet Weight (Total) | 29.811 | g | |
| Tare Weight | 21.026 | g | |
| Dry Weight (Total) | 29.38 | g | |
| Solids, Percent | 95.1 | % | |
| **Sample:** MC16644-2 | **Analyzed:** 11-DEC-12 by MC | | **Method:** SM21 2540 B MOD. |
| ClientID: MW-21-31 | | | |
| Wet Weight (Total) | 32.753 | g | |
| Tare Weight | 19.011 | g | |
| Dry Weight (Total) | 31.978 | g | |
| Solids, Percent | 94.4 | % | |
| **Sample:** MC16644-3 | **Analyzed:** 11-DEC-12 by MC | | **Method:** SM21 2540 B MOD. |
| ClientID: MW-21-31 DUP | | | |
| Wet Weight (Total) | 29.948 | g | |
| Tare Weight | 20.61 | g | |
| Dry Weight (Total) | 29.472 | g | |
| Solids, Percent | 94.9 | % | |
| **Sample:** MC16644-4 | **Analyzed:** 11-DEC-12 by MC | | **Method:** SM21 2540 B MOD. |
| ClientID: MW-21-41 | | | |
| Wet Weight (Total) | 33.012 | g | |
| Tare Weight | 21.267 | g | |
| Dry Weight (Total) | 30.834 | g | |
| Solids, Percent | 81.5 | % | |

8.1

# Roxana Drilling 2013 Data Review

**Laboratory SDG: MC17501**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 2/25/2013**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| P55R-43 | P55R-51 |
| TRIP BLANK | |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS/LCSD recoveries were outside evaluation criteria. VOC by 8011 surrogate recovery for bromofluorobenzene was outside evaluation criteria in samples and quality control samples. The internal standard area recovery for tert butyl alcohol-$d_9$ in the VOC method blank was outside criteria. Although not indicated in the laboratory case narrative, methylene chloride was detected in the method blank. The initial calibration verification recovery for acrolein, acetone, 2-butanone, and 2-hexanone exceeded 50 percent difference (%D). The continuing calibration verification recovery for acrolein exceeded 50 percent difference (%D). These issues are addressed further in the appropriate sections below.

The cooler receipt form did not indicate any problems.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

Yes

| Blank ID | Parameter | Analyte | Concentration |
|---|---|---|---|
| MSM1817-MB | VOCs | Methylene chloride | 2.1 ug/L |

Analytical data that were reported non-detect or at concentrations greater than five times (5X) the associated blank concentration (10X for common laboratory contaminants) did not require qualification. No qualification of data was required.

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSM1817-BS | VOCs | Chloromethane | **138** | NA | 70-130 |
| MSM1817-BS | VOCs | Dichlorodifluoromethane | **155** | NA | 70-130 |
| MSG4911-BS/BSD | VOCs | Acetone | **140**/124 | 12 | 70-130/25 |
| MSG4911-BS/BSD | VOCs | Acrolein | **64/68** | 6 | 70-130/25 |
| MSK2185-BS/BSD | VOCs | n-Butylbenzene | 128/**133** | 3 | 70-130/25 |
| MSK2185-BS/BSD | VOCs | 2-Chloroethyl vinyl ether | **39/39** | 1 | 70-130/25 |

Analytical data that required qualification based on LCS/LCSD data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS/LCSD MSK2185-BS/BSD was associated with the trip blank. Trip blanks are quality control samples and are not qualified.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| P-55R-43 | VOCs | Acrolein | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

No

| Sample ID | Parameter | Surrogate | Recovery | Criteria |
|---|---|---|---|---|
| P-55R-43 | VOCs by 8011 | Bromofluorobenzene (S) | **298** | 61-167 |
| P-55R-51 | VOCs by 8011 | Bromofluorobenzene (S) | **625** | 61-167 |
| OP31778-MB | VOCs by 8011 | Bromofluorobenzene (S) | **593** | 61-167 |
| OP31778-BS | VOCs by 8011 | Bromofluorobenzene (S) | **542** | 61-167 |
| OP31778-MS/MSD | VOCs by 8011 | Bromofluorobenzene (S) | **479/497** | 61-167 |

Analytical data reported as non-detect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. Method blank, LCS, and MS/MSD OP31778 are quality control samples, and are not qualified. No qualification of data was required.

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, although not requested, sample P-55R-51 was spiked and analyzed for VOCs by 8011.

*Were MS/MSD recoveries within evaluation criteria?*

Yes

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

No

| Sample ID | Parameter | Analyte | IS Area Recovery | IS Criteria |
|---|---|---|---|---|
| MSM1817-MB | VOCs | Tert butyl alcohol-$d_9$ | **166786** | 169419-677674 |

Method blank MSM1817-MB is a quality control sample and is not qualified. No qualification of data was required.

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

No

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

Yes, sample P-55R-43 was associated with the initial calibration verification recovery for acetone, acrolein, vinyl acetate, 2-hexanone, and 2-butanone that exceeded 50 percent difference (%D). The trip blank was associated with the continuing calibration verification recovery for acrolein that exceeded 50 percent difference (%D). Trip blanks are quality control samples and are not qualified. Acrolein was previously qualified due to LCS/LCSD data in Section 5.0 of this review in sample P-55R-43. Analytes in samples associated with ICV %D greater than 50% were qualified as summarized in the following table.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| P-55R-43 | VOCs | Acetone | **UJ** |
| P-55R-43 | VOCs | 2-Butnanone | **UJ** |
| P-55R-43 | VOCs | 2-Hexanone | **UJ** |

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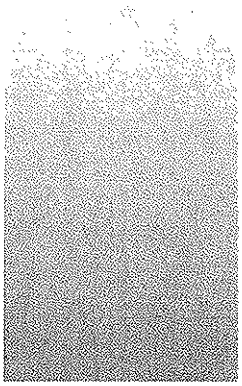
02/05/13





## Technical Report for

Shell Oil

URSMOSTL: Roxana Drilling, Roxana, IL

21562850.15000

Accutest Job Number: MC17501

Sampling Date: 01/10/13

Report to:

URS Corporation

elizabeth.kunkel@URS.com

ATTN: Elizabeth Kunkel

Reviewed on 2/25/2013

Total number of pages in report: **64**

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Reza Pand
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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# Sample Summary

Shell Oil

Job No: MC17501

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562850.15000

| Sample Number | Collected Date | Time By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|
| MC17501-1 | 01/10/13 | 13:05 WPJS | 01/12/13 | SO | Soil | P-55R-43 |
| MC17501-2 | 01/10/13 | 13:10 WPJS | 01/12/13 | SO | Soil | P-55R-51 |
| MC17501-3 | 01/10/13 | 00:00 WPJS | 01/12/13 | AQ | Trip Blank Water | TRIP BLANK |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

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2

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC17501 |
| **Site:** | URSMOSTL: Roxana Drilling, Roxana, IL | **Report Date** | 1/28/2013 4:38:05 PM |

2 Sample(s) and 1 Trip Blank(s) were collected on 01/10/2013 and were received at Accutest on 01/12/2013 properly preserved, at 2 Deg. C and intact. These Samples received an Accutest job number of MC17501. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. 1-Chlorohexane was searched in the library search and reported only if detection was found.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSK2185

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC17426-3MS, MC17426-3MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for 2-Chloroethyl vinyl ether are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for 2-Chloroethyl vinyl ether, Acrolein, Styrene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for Acrolein are outside control limits for sample MC17426-3MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- Blank Spike Duplicate Recovery(s) for n-Butylbenzene, 2-Chloroethyl vinyl ether are outside control limits. Blank Spike meets program technical requirements.
- Continuing calibration check standard MSK2185-CC2177 for acrolein exceeds 50% Difference (response bias high). Associated sample is non-detect for this compound.

**Matrix** SO **Batch ID:** MSG4911

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC17550-1MS, MC17550-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Acetone, Acrolein are outside control limits. Blank Spike meets program technical requirements.
- Blank Spike Duplicate Recovery(s) for Acrolein are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Acrolein are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for Vinyl chloride are outside control limits for sample MC17550-1MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- Initial calibration verification MSG4894-ICV4894 for acrolein, acetone, 2-butanone, 2-hexanone exceeds 50% Differenee. These compounds are within criteria in continuing calibration check standard MSG4911-CC4894.

**Matrix** SO **Batch ID:** MSM1817

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC17443-1MS, MC17443-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Chloromethane, Dichlorodifluoromethane are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Acetone are outside control limits. Outside control limits due to high level in sample relative to spike amount.

## Volatiles by GCMS By Method SW846 8260B

| Matrix SO | Batch ID: MSM1817 |
|---|---|

- MS/MSD for some of compounds are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSM1817-MB for Tert Butyl Alcohol-D9: Outside control limits. Target analytes not associated with this internal standard.

## Volatiles by GC By Method SW846 8011

| Matrix SO | Batch ID: OP31778 |
|---|---|

- All samples were extracted within the reeommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC17501-2MS, MC17501-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MC17501-1, MC17501-2, OP31778-MS, OP31778-MSD for Bromofluorobenzene (S): Outside control limits. Sample is non-detect for target analytes.
- OP31778-MB, OP31778-BS for Bromofluorobenzene (S): Outside control limits. Associated samples are non-detect for target analytes.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN41532 |
|---|---|

- Sample(s) MC17550-1DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC17501).

# Summary of Hits



Job Number: MC17501
Account: Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Collected: 01/10/13

| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| MC17501-1 | P-55R-43 | | | | | |
| Benzene | | 4.25 | 0.093 | 0.055 | mg/kg | SW846 8260B |
| n-Butylbenzene | | 2.65 | 0.93 | 0.034 | mg/kg | SW846 8260B |
| sec-Butylbenzene | | 0.996 | 0.93 | 0.043 | mg/kg | SW846 8260B |
| Ethylbenzene | | 22.8 | 0.37 | 0.045 | mg/kg | SW846 8260B |
| Isopropylbenzene | | 2.59 | 0.93 | 0.042 | mg/kg | SW846 8260B |
| p-Isopropyltoluene | | 0.679 J | 0.93 | 0.033 | mg/kg | SW846 8260B |
| Naphthalene | | 11.3 | 0.93 | 0.23 | mg/kg | SW846 8260B |
| n-Propylbenzene | | 5.70 | 0.93 | 0.19 | mg/kg | SW846 8260B |
| Toluene | | 10.8 | 0.93 | 0.16 | mg/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | | 30.1 | 0.93 | 0.042 | mg/kg | SW846 8260B |
| 1,3,5-Trimethylbenzene | | 7.68 | 0.93 | 0.040 | mg/kg | SW846 8260B |
| m,p-Xylene | | 58.5 | 0.37 | 0.15 | mg/kg | SW846 8260B |
| o-Xylene | | 24.8 | 0.37 | 0.045 | mg/kg | SW846 8260B |
| Xylene (total) | | 83.3 | 0.37 | 0.045 | mg/kg | SW846 8260B |
| MC17501-2 | P-55R-51 | | | | | |
| Benzene | | 0.0019 | 0.00054 | 0.00032 | mg/kg | SW846 8260B |
| n-Butylbenzene | | 0.0087 | 0.0054 | 0.00020 | mg/kg | SW846 8260B |
| sec-Butylbenzene | | 0.0040 J | 0.0054 | 0.00025 | mg/kg | SW846 8260B |
| Carbon disulfide | | 0.0046 J | 0.0054 | 0.00018 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0098 | 0.0022 | 0.00026 | mg/kg | SW846 8260B |
| Isopropylbenzene | | 0.0043 J | 0.0054 | 0.00025 | mg/kg | SW846 8260B |
| p-Isopropyltoluene | | 0.0017 J | 0.0054 | 0.00019 | mg/kg | SW846 8260B |
| Naphthalene | | 0.0125 | 0.0054 | 0.0014 | mg/kg | SW846 8260B |
| n-Propylbenzene | | 0.0119 | 0.0054 | 0.0011 | mg/kg | SW846 8260B |
| Toluene | | 0.0055 | 0.0054 | 0.00092 | mg/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | | 0.0144 | 0.0054 | 0.00024 | mg/kg | SW846 8260B |
| 1,3,5-Trimethylbenzene | | 0.0051 J | 0.0054 | 0.00023 | mg/kg | SW846 8260B |
| Vinyl Acetate | | 0.0245 | 0.0054 | 0.00060 | mg/kg | SW846 8260B |
| m,p-Xylene | | 0.0154 | 0.0022 | 0.00085 | mg/kg | SW846 8260B |
| o-Xylene | | 0.0082 | 0.0022 | 0.00026 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0236 | 0.0022 | 0.00026 | mg/kg | SW846 8260B |
| MC17501-3 | TRIP BLANK | | | | | |

No hits reported in this sample.

New England ACCUTEST LABORATORIES



## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | P-55R-43 | | |
| Lab Sample ID: | MC17501-1 | Date Sampled: | 01/10/13 |
| Matrix: | SO - Soil | Date Received: | 01/12/13 |
| Method: | SW846 8260B | Percent Solids: | 63.9 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | G123694.D | 1 | 01/16/13 | JM | n/a | n/a | MSG4911 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.97 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.93 | 0.23 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 4.6 | 1.9 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 4.6 | 0.23 | mg/kg | |
| 71-43-2 | Benzene | 4.25 | 0.093 | 0.055 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.93 | 0.041 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.93 | 0.069 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.37 | 0.039 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.37 | 0.37 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.37 | 0.096 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.93 | 0.23 | mg/kg | UJ |
| 104-51-8 | n-Butylbenzene | 2.65 | 0.93 | 0.034 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | 0.996 | 0.93 | 0.043 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.93 | 0.16 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.93 | 0.031 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.37 | 0.13 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.37 | 0.051 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.93 | 0.23 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.93 | 0.37 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.37 | 0.096 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.93 | 0.086 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.93 | 0.20 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.93 | 0.042 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.37 | 0.055 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.37 | 0.040 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.37 | 0.042 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.37 | 0.039 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.37 | 0.21 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.37 | 0.050 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.37 | 0.053 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.37 | 0.068 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.37 | 0.056 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.37 | 0.053 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | P-55R-43 | | |
| Lab Sample ID: | MC17501-1 | Date Sampled: | 01/10/13 |
| Matrix: | SO - Soil | Date Received: | 01/12/13 |
| Method: | SW846 8260B | Percent Solids: | 63.9 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.37 | 0.069 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.93 | 0.043 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.93 | 0.16 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.93 | 0.049 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.37 | 0.032 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.37 | 0.092 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 4.6 | 4.6 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.93 | 0.13 | mg/kg | |
| 100-41-4 | Ethylbenzene | 22.8 | 0.37 | 0.045 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.93 | 0.086 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.93 | 0.093 | mg/kg | UJ |
| 98-82-8 | Isopropylbenzene | 2.59 | 0.93 | 0.042 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | 0.679 | 0.93 | 0.033 | mg/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.37 | 0.053 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.93 | 0.093 | mg/kg | |
| 74-95-3 | Methylene hromide | ND | 0.93 | 0.092 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.37 | 0.22 | mg/kg | |
| 91-20-3 | Naphthalene | 11.3 | 0.93 | 0.23 | mg/kg | |
| 103-65-1 | n-Propylbenzene | 5.70 | 0.93 | 0.19 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.93 | 0.043 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.93 | 0.19 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.37 | 0.079 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.37 | 0.043 | mg/kg | |
| 108-88-3 | Toluene | 10.8 | 0.93 | 0.16 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.93 | 0.044 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.93 | 0.043 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.37 | 0.058 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.37 | 0.14 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.37 | 0.039 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.37 | 0.056 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.93 | 0.054 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 30.1 | 0.93 | 0.042 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 7.68 | 0.93 | 0.040 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.93 | 0.10 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.37 | 0.051 | mg/kg | |
| | m,p-Xylene | 58.5 | 0.37 | 0.15 | mg/kg | |
| 95-47-6 | o-Xylene | 24.8 | 0.37 | 0.045 | mg/kg | |
| 1330-20-7 | Xylene (total) | 83.3 | 0.37 | 0.045 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | P-55R-43 | | |
| Lab Sample ID: | MC17501-1 | Date Sampled: | 01/10/13 |
| Matrix: | SO - Soil | Date Received: | 01/12/13 |
| Method: | SW846 8260B | Percent Solids: | 63.9 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 87% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 85% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 80% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presnmptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | P-55R-43 | | |
| Lab Sample ID: | MC17501-1 | Date Sampled: | 01/10/13 |
| Matrix: | SO - Soil | Date Received: | 01/12/13 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 63.9 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | YZ78064.D | 1 | 01/24/13 | CZ | 01/23/13 | OP31778 | GYZ7026 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.4 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0039 | 0.0017 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0039 | 0.0015 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 142% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 298% [a] | | 61-167% |

(a) Outside control limits.Sample is non-detect for target analytes.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | P-55R-51 | | |
| Lab Sample ID: | MC17501-2 | Date Sampled: | 01/10/13 |
| Matrix: | SO - Soil | Date Received: | 01/12/13 |
| Method: | SW846 8260B | Percent Solids: | 85.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53471.D | 1 | 01/16/13 | AMY | n/a | n/a | MSM1817 |
| Run #2 | | | | | | | |

| | Initial Weigbt | Final Volume |
|---|---|---|
| Run #1 | 5.40 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0054 | 0.0014 | mg/kg | |
| 107-02-8 | Acrolein | ND | 0.027 | 0.011 | mg/kg | |
| 107-13-1 | Acrylonitrile | ND | 0.027 | 0.0014 | mg/kg | |
| 71-43-2 | Benzene | 0.0019 | 0.00054 | 0.00032 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0054 | 0.00024 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0054 | 0.00040 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0022 | 0.00023 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0022 | 0.0022 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0022 | 0.00056 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0054 | 0.0014 | mg/kg | |
| 104-51-8 | n-Butylbenzene | 0.0087 | 0.0054 | 0.00020 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | 0.0040 | 0.0054 | 0.00025 | mg/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 0.0054 | 0.00095 | mg/kg | |
| 75-15-0 | Carbon disulfide | 0.0046 | 0.0054 | 0.00018 | mg/kg | J |
| 56-23-5 | Carbon tetrachloride | ND | 0.0022 | 0.00079 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0022 | 0.00030 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0054 | 0.0014 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0054 | 0.0022 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0022 | 0.00056 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0054 | 0.00050 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0054 | 0.0012 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0054 | 0.00025 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0022 | 0.00032 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0022 | 0.00023 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0022 | 0.00024 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0022 | 0.00023 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0022 | 0.0012 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0022 | 0.00029 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0022 | 0.00031 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0022 | 0.00040 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0022 | 0.00033 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0022 | 0.00031 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | P-55R-51 | | |
| Lab Sample ID: | MC17501-2 | Date Sampled: | 01/10/13 |
| Matrix: | SO - Soil | Date Received: | 01/12/13 |
| Method: | SW846 8260B | Percent Solids: | 85.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0022 | 0.00040 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0054 | 0.00025 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0054 | 0.00094 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0054 | 0.00028 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0022 | 0.00018 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0022 | 0.00054 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.027 | 0.027 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0054 | 0.00074 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0098 | 0.0022 | 0.00026 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0054 | 0.00050 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0054 | 0.00054 | mg/kg | |
| 98-82-8 | Isopropylbenzene | 0.0043 | 0.0054 | 0.00025 | mg/kg | J |
| 99-87-6 | p-Isopropyltoluene | 0.0017 | 0.0054 | 0.00019 | mg/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0022 | 0.00031 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0054 | 0.00054 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0054 | 0.00053 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0022 | 0.0013 | mg/kg | |
| 91-20-3 | Naphthalene | 0.0125 | 0.0054 | 0.0014 | mg/kg | |
| 103-65-1 | n-Propylbenzene | 0.0119 | 0.0054 | 0.0011 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0054 | 0.00025 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0054 | 0.0011 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0022 | 0.00046 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0022 | 0.00025 | mg/kg | |
| 108-88-3 | Toluene | 0.0055 | 0.0054 | 0.00092 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0054 | 0.00026 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0054 | 0.00025 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0022 | 0.00034 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0022 | 0.00079 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0022 | 0.00023 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0022 | 0.00033 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0054 | 0.00032 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 0.0144 | 0.0054 | 0.00024 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 0.0051 | 0.0054 | 0.00023 | mg/kg | J |
| 108-05-4 | Vinyl Acetate | 0.0245 | 0.0054 | 0.00060 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0022 | 0.00029 | mg/kg | |
| | m,p-Xylene | 0.0154 | 0.0022 | 0.00085 | mg/kg | |
| 95-47-6 | o-Xylene | 0.0082 | 0.0022 | 0.00026 | mg/kg | |
| 1330-20-7 | Xylene (total) | 0.0236 | 0.0022 | 0.00026 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | P-55R-51 | | |
| Lab Sample ID: | MC17501-2 | Date Sampled: | 01/10/13 |
| Matrix: | SO - Soil | Date Received: | 01/12/13 |
| Method: | SW846 8260B | Percent Solids: | 85.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 108% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | P-55R-51 | | |
| Lab Sample ID: | MC17501-2 | Date Sampled: | 01/10/13 |
| Matrix: | SO - Soil | Date Received: | 01/12/13 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 85.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | YZ78063.D | 1 | 01/24/13 | CZ | 01/23/13 | OP31778 | GYZ7026 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.8 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0028 | 0.0013 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0028 | 0.0011 | mg/kg | |

| CAS No. | Surrogate Recoverics | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 154% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 625% [a] | | 61-167% |

(a) Outside control limits.Sample is non-detect for target analytes.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC17501-3 | Date Sampled: | 01/10/13 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 01/12/13 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K66565.D | 1 | 01/18/13 | GK | n/a | n/a | MSK2185 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 3.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.2 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.24 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.62 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.3 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.58 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.78 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.4 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.61 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.55 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.64 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.61 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.87 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.47 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.50 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 1.3 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.50 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.73 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.65 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.48 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.53 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.93 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.45 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.64 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.7 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.62 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.41 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.95 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC17501-3 | Date Sampled: | 01/10/13 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 01/12/13 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.72 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.64 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 1.6 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.91 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.45 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.20 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 15 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.81 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.51 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 2.1 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.50 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.57 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.41 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 2.9 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.1 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.83 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.58 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.45 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.57 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.60 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.42 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.51 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.85 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.50 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.78 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.29 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.85 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.35 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.47 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.3 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.63 | ng/l | |
| | m,p-Xylene | ND | 1.0 | 0.73 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.58 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.58 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC17501-3 | Date Sampled: | 01/10/13 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 01/12/13 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 114% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 107% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 113% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES



# Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

ACCUTEST LABORATORIES

# CHAIN OF CUSTODY

Accutest Laboratories of New England
495 Technology Center West, Building One
TEL 508-481-6200 FAX: 508-481-7753
www.accutest.com

PAGE 1 OF 1

| FED-EX Tracking # | Bottle Order Control # |
|---|---|
| Accutest Quote # | Accutest Job # MC17501 |

| Client / Reporting Information | Project Information | Requested Analysis ( see TEST CODE sheet) | Matrix Codes |
|---|---|---|---|
| Company Name: URS | Project Name: Roxana Drilling | | DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB- Equipment Blank; RB - Rinse Blank; TB-Trip Blank |
| Street Address: | Street: | | |
| City: State: Zip: | City: Roxana, IL | Billing Information ( if different from Report to) Company Name: URS | |
| Project Contact: E. Kunkel E-mail: | Project#: 21562850.15000 | Street Address: | |
| Phone #: Fax #: | Client PO#: | City: State: Zip: | |
| Sampler(s) Name(s): Wendy Pennington, Jason Staetter Phone #: | Project Manager: D. Palmer | Attention: PO#: | |

| Accutest Sample # | Field ID / Point of Collection | MEOH/DI Vol # | Collection Date | Collection Time | Sampled by | Matrix | # of bottles | HCl | Mixed Acid/Base | HNO3 | H2SO4 | NONE | DI Water | MEOH | ENCORE | Bleu/Ba | VOC 8260 | VOC 8011 | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | P-55R-43 | | 1/10/13 | 1305 | WP/JS | SO | 4 | | | | | X | | X | | X | X | X | |
| -2 | P-55R-51 | | ↓ | 1310 | ↓ | ↓ | ↓ | | | | | X | | X | | X | X | X | |
| -3 | Trip Blank | | ↓ | | ↓ | TB | ↓ | X | X | | | | | | | | X | X | |
| | | | | | | | | | | | | | | | | | | | 1N2, 15B |
| | | | | | | | | | | | | | | | | | | | 10D6 |

Turnaround Time ( Business days)
- [x] Std 10 Business Days
- [ ] Std 5 Business Days (By Contract only)
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Labtink

Approved By (Accutest PM) / Date

Data Deliverable Information
- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" ( Level 2)
- [x] FULLT1 ( Level 3+4 )
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [x] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

| Relinquished by Sampler | Date Time | Received By | Relinquished By | Date Time | Received By |
|---|---|---|---|---|---|
| 1 Wendy Pennington | 1/11/13 1400 | 1 FedEx | 2 Fedex | 1/12/13 10:00 | 2 [signature] |
| 3 | | 3 | 4 | | 4 |
| 5 | | 5 | Custody Seal # ☐ Intact ☐ Not intact | Preserved where applicable ☐ | On Ice ☑ Cooler Temp 2.0° |

5.1

5

**MC17501: Chain of Custody**
**Page 1 of 2**

ACCUTEST LABORATORIES

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC17501 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 1/12/2013 Delivery Method: Client Service Action Required at Login: No

Project: ROX DRILLING No. Coolers: 1 Airbill #'s:

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2. Custody Seals Intact: | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification: | Infared gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservatio | Y or N | N/A |
|---|---|---|
| 1. Trip Blank present / cooler: | ☑ ☐ | ☐ |
| 2. Trip Blank listed on COC: | ☑ ☐ | ☐ |
| 3. Samples preserved properly: | ☑ ☐ | |
| 4. VOCs headspace free: | ☑ ☐ | ☐ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles: | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree: | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1. Sample recvd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3. Condition of sample: | Intact |

| Sample Integrity - Instructions | Y or N | N/A |
|---|---|---|
| 1. Analysis requested is clear: | ☑ ☐ | |
| 2. Bottles received for unspecified tests | ☐ ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ ☐ | |
| 4. Compositing instructions clear: | ☐ ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ ☐ | ☑ |

Comments



5.1

**MC17501: Chain of Custody**
**Page 2 of 2**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC17501

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562850.15000



| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC17501-1 Collected: 10-JAN-13 13:05 By: WPJS Received: 12-JAN-13 By: P-55R-43 | | | | | | |
| MC17501-1 | SM21 2540 B MOD. | 16-JAN-13 | HS | | | %SOL |
| MC17501-1 | SW846 8260B | 16-JAN-13 14:55 | JM | | | V8260SL+ |
| MC17501-1 | SW846 8011 | 24-JAN-13 12:10 | CZ | 23-JAN-13 | BJ | V8011SL |
| MC17501-2 Collected: 10-JAN-13 13:10 By: WPJS Received: 12-JAN-13 By: P-55R-51 | | | | | | |
| MC17501-2 | SM21 2540 B MOD. | 16-JAN-13 | HS | | | %SOL |
| MC17501-2 | SW846 8260B | 16-JAN-13 17:55 | AMY | | | V8260SL+ |
| MC17501-2 | SW846 8011 | 24-JAN-13 11:45 | CZ | 23-JAN-13 | BJ | V8011SL |
| MC17501-3 Collected: 10-JAN-13 00:00 By: WPJS Received: 12-JAN-13 By: TRIP BLANK | | | | | | |
| MC17501-3 | SW846 8260B | 18-JAN-13 11:26 | GK | | | V8260SL+ |

# Accutest Internal Chain of Custody



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 01/12/13

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC17501-1.1 | Walk In Ref #9 | Hamid Siamak | 01/16/13 08:44 | Retrieve from Storage |
| MC17501-1.1 | Hamid Siamak | Walk In Ref #9 | 01/16/13 11:25 | Return to Storage |
| MC17501-1.1 | Walk In Ref #9 | Bijan Jafari | 01/23/13 19:19 | Retrieve from Storage |
| MC17501-1.1 | Bijan Jafari | | 02/02/13 13:41 | Depleted |
| MC17501-1.4 | VOC Ref #10 | Jaime Maslowski | 01/15/13 15:33 | Retrieve from Storage |
| MC17501-1.4 | Jaime Maslowski | VOC Ref #10 | 01/16/13 09:46 | Return to Storage |
| MC17501-1.4 | VOC Ref #10 | Jaime Maslowski | 01/16/13 09:47 | Retrieve from Storage |
| MC17501-1.4 | Jaime Maslowski | VOC Ref #10 | 01/17/13 09:54 | Return to Storage |
| MC17501-2.1 | Walk In Ref #9 | Hamid Siamak | 01/16/13 08:44 | Retrieve from Storage |
| MC17501-2.1 | Hamid Siamak | Walk In Ref #9 | 01/16/13 11:25 | Return to Storage |
| MC17501-2.1 | Walk In Ref #9 | Bijan Jafari | 01/23/13 19:19 | Retrieve from Storage |
| MC17501-2.1 | Bijan Jafari | | 02/02/13 13:41 | Depleted |
| MC17501-2.2 | VOC Ref #10 | Amy Min Yang | 01/16/13 12:14 | Retrieve from Storage |
| MC17501-2.2 | Amy Min Yang | GCMSM | 01/16/13 12:15 | Load on Instrument |
| MC17501-2.2 | GCMSM | Amy Min Yang | 01/22/13 09:57 | Unload from Instrument |
| MC17501-2.2 | Amy Min Yang | VOC Ref #10 | 01/22/13 09:59 | Return to Storage |
| MC17501-2.4 | VOC Ref #10 | Jaime Maslowski | 01/15/13 15:33 | Retrieve from Storage |
| MC17501-2.4 | Jaime Maslowski | VOC Ref #10 | 01/16/13 09:46 | Return to Storage |
| MC17501-3.2 | VOC Ref #1 | Gary Krasinski | 01/18/13 09:56 | Retrieve from Storage |
| MC17501-3.2 | Gary Krasinski | VOC Ref #1 | 01/21/13 08:33 | Return to Storage |

New England ACCUTEST LABORATORIES

## GC/MS Volatiles

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## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4911-MB | G123685.D | 1 | 01/16/13 | JM | n/a | n/a | MSG4911 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 63 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 500 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 1300 | 63 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 11 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 19 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 11 | ng/kg | |
| 75-25-2 | Bromoform | ND | 100 | 100 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 26 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 63 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 9.2 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 11 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 44 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 8.2 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 36 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 14 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 63 | ug/kg | |
| 110-75-8 | 2-Chloroethyl viuyl ether | ND | 250 | 100 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 26 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 23 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 55 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 11 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 15 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethaue | ND | 100 | 57 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 14 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethaue | ND | 100 | 14 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 18 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 15 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 19 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 12 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 43 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 13 | ug/kg | |

# Method Blank Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4911-MB | G123685.D | 1 | 01/16/13 | JM | n/a | n/a | MSG4911 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 8.5 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 25 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 34 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 12 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 23 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 25 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 11 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.9 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 14 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 25 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 25 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 58 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 63 | ug/kg | |
| 103-65-1 | n-Propylbenzeue | ND | 250 | 51 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 12 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 21 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 11 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 42 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 12 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 11 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 16 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 37 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 11 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 15 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 15 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 11 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 11 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 28 | ug/kg | |
| 75-01-4 | Viuyl chloride | ND | 100 | 14 | ug/kg | |
| | m,p-Xylene | ND | 100 | 39 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 12 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 12 | ug/kg | |

# Method Blank Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4911-MB | G123685.D | 1 | 01/16/13 | JM | n/a | n/a | MSG4911 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-1

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 87% | 70-130% |
| 2037-26-5 | Toluene-D8 | 84% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 78% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/kg | |

# Method Blank Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1817-MB | M53457.D | 1 | 01/16/13 | AMY | n/a | n/a | MSM1817 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 25 | 1.3 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.29 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.37 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 2.0 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.52 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.88 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.16 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.73 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.28 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 1.3 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 2.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.52 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.46 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.23 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.30 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.22 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.23 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.21 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.27 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.29 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.37 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.37 | ng/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.23 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.87 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.26 | ug/kg | |

# Method Blank Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1817-MB | M53457.D | 1 | 01/16/13 | AMY | n/a | n/a | MSM1817 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 0.17 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.50 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.68 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.24 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 0.46 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 0.50 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.18 | ng/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.29 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.50 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.49 | ug/kg | |
| 75-09-2 | Methylene chloride | 2.1 | 2.0 | 1.2 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 1.3 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 1.0 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.23 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.43 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.23 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.85 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 0.24 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 0.23 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.31 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.73 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.30 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.29 | ng/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.22 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.21 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 0.56 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.27 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.79 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.24 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.24 | ug/kg | |

# Method Blank Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1817-MB | M53457.D | 1 | 01/16/13 | AMY | n/a | n/a | MSM1817 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-2

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | 70-130% |
| 2037-26-5 | Toluene-D8 | 108% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/kg | |

# Method Blank Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2185-MB | K66562.D | 1 | 01/18/13 | GK | n/a | n/a | MSK2185 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 3.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.2 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.24 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.62 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.3 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.58 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.78 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.4 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.61 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.55 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.64 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.61 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.87 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.47 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.50 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 1.3 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.50 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.73 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.65 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.48 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.53 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.93 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.45 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.64 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.7 | ug/l | |
| 75-34-3 | 1,1-Dichloroethaue | ND | 1.0 | 0.62 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.41 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.95 | ng/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.72 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.64 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 1.6 | ng/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.91 | ug/l | |

# Method Blank Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2I85-MB | K66562.D | 1 | 01/18/13 | GK | n/a | n/a | MSK2185 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.45 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.20 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 15 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.81 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.51 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 2.1 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.0 | ug/l | |
| 98-82-8 | Isopropylbeuzene | ND | 5.0 | 0.50 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.57 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.41 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 2.9 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.1 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.83 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.58 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.45 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.57 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethaue | ND | 1.0 | 0.60 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.42 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.51 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobeuzene | ND | 5.0 | 1.3 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethaue | ND | 1.0 | 0.85 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.50 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.78 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.29 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.85 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.35 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.47 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.3 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.63 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.73 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.58 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.58 | ug/l | |

# Method Blank Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2185-MB | K66562.D | 1 | 01/18/13 | GK | n/a | n/a | MSK2185 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-3

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 107% | 70-130% |
| 2037-26-5 | Toluene-D8 | 109% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 108% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

# Blank Spike Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1817-BS | M53455.D | 1 | 01/16/13 | AMY | n/a | n/a | MSM1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-2

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 38.3 | 77 | 70-130 |
| 107-02-8 | Acrolein | 250 | 224 | 90 | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 59.0 | 118 | 70-130 |
| 71-43-2 | Benzene | 50 | 52.1 | 104 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 42.4 | 85 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 53.3 | 107 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 49.4 | 99 | 70-130 |
| 75-25-2 | Bromoform | 50 | 43.1 | 86 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 59.0 | 118 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 47.8 | 96 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 48.1 | 96 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 46.4 | 93 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 44.9 | 90 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 62.9 | 126 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 56.4 | 113 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 43.1 | 86 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 61.2 | 122 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 42.8 | 86 | 10-160 |
| 67-66-3 | Chloroform | 50 | 55.4 | 111 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 68.8 | 138* [a] | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 42.6 | 85 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 43.6 | 87 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 43.5 | 87 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 40.5 | 81 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 42.0 | 84 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 42.3 | 85 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 77.6 | 155* [a] | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 57.6 | 115 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 48.8 | 98 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 62.9 | 126 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 55.7 | 111 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 57.1 | 114 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 49.8 | 100 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 42.7 | 85 | 70-130 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 61.4 | 123 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 56.8 | 114 | 70-130 |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1817-BS | M53455.D | 1 | 01/16/13 | AMY | n/a | n/a | MSM1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-2

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 48.6 | 97 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 50.4 | 101 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 279 | 112 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 55.1 | 110 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 47.6 | 95 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 48.3 | 97 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 53.6 | 107 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 46.2 | 92 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 48.9 | 98 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 51.3 | 103 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 58.5 | 117 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 49.2 | 98 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 52.4 | 105 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 51.6 | 103 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 45.5 | 91 | 70-130 |
| 100-42-5 | Styrene | 50 | 44.0 | 88 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 44.4 | 89 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 44.1 | 88 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 49.3 | 99 | 70-130 |
| 108-88-3 | Toluene | 50 | 54.4 | 109 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 44.9 | 90 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 45.9 | 92 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 61.4 | 123 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 50.1 | 100 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 54.6 | 109 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 65.0 | 130 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 46.0 | 92 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 45.2 | 90 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 45.3 | 91 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 41.5 | 83 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 60.5 | 121 | 70-130 |
| | m,p-Xylene | 100 | 94.0 | 94 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 45.3 | 91 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 139 | 93 | 70-130 |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1817-BS | M53455.D | 1 | 01/16/13 | AMY | n/a | n/a | MSM1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-2

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 102% | 70-130% |
| 2037-26-5 | Toluene-D8 | 109% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4911-BS | G123682.D | 1 | 01/16/13 | JM | n/a | n/a | MSG4911 |
| MSG4911-BSD | G123683.D | 1 | 01/16/13 | JM | n/a | n/a | MSG4911 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-1

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 3510 | 140* a | 3100 | 124 | 12 | 70-130/25 |
| 107-02-8 | Acrolein | 12500 | 8010 | 64* a | 8470 | 68* a | 6 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 2500 | 2410 | 96 | 2420 | 97 | 0 | 70-130/25 |
| 71-43-2 | Benzene | 2500 | 2400 | 96 | 2390 | 96 | 0 | 70-130/25 |
| 108-86-1 | Bromobenzene | 2500 | 2480 | 99 | 2500 | 100 | 1 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 2500 | 2530 | 101 | 2530 | 101 | 0 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 2500 | 2500 | 100 | 2510 | 100 | 0 | 70-130/25 |
| 75-25-2 | Bromoform | 2500 | 2290 | 92 | 2280 | 91 | 0 | 70-130/25 |
| 74-83-9 | Bromomethane | 2500 | 2550 | 102 | 2520 | 101 | 1 | 70-130/25 |
| 78-93-3 | 2-Bntanone (MEK) | 2500 | 3010 | 120 | 2870 | 115 | 5 | 70-130/25 |
| 104-51-8 | n-Butylhenzene | 2500 | 2390 | 96 | 2350 | 94 | 2 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2290 | 92 | 2280 | 91 | 0 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2000 | 80 | 1950 | 78 | 3 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 2500 | 2480 | 99 | 2440 | 98 | 2 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2440 | 98 | 2400 | 96 | 2 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 2500 | 2430 | 97 | 2380 | 95 | 2 | 70-130/25 |
| 75-00-3 | Chloroethane | 2500 | 2620 | 105 | 2570 | 103 | 2 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 680 | 27 | 687 | 27 | 1 | 10-160/25 |
| 67-66-3 | Chloroform | 2500 | 2470 | 99 | 2440 | 98 | 1 | 70-130/25 |
| 74-87-3 | Chloromethane | 2500 | 2860 | 114 | 2750 | 110 | 4 | 70-130/25 |
| 95-49-8 | o-Chlorotolnene | 2500 | 2280 | 91 | 2240 | 90 | 2 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2330 | 93 | 2360 | 94 | 1 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 2500 | 2520 | 101 | 2470 | 99 | 2 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2350 | 94 | 2340 | 94 | 0 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2360 | 94 | 2360 | 94 | 0 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2520 | 101 | 2500 | 100 | 1 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 2750 | 110 | 2720 | 109 | 1 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2480 | 99 | 2450 | 98 | 1 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2480 | 99 | 2500 | 100 | 1 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2680 | 107 | 2680 | 107 | 0 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2430 | 97 | 2440 | 98 | 0 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2510 | 100 | 2490 | 100 | 1 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2450 | 98 | 2470 | 99 | 1 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2470 | 99 | 2410 | 96 | 2 | 70-130/25 |
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2620 | 105 | 2510 | 100 | 4 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2460 | 98 | 2430 | 97 | 1 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4911-BS | G123682.D | 1 | 01/16/13 | JM | n/a | n/a | MSG4911 |
| MSG4911-BSD | G123683.D | 1 | 01/16/13 | JM | n/a | n/a | MSG4911 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-1

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2470 | 99 | 2460 | 98 | 0 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2600 | 104 | 2590 | 104 | 0 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 12500 | 10800 | 86 | 11200 | 90 | 4 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2380 | 95 | 2420 | 97 | 2 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 2500 | 2480 | 99 | 2410 | 96 | 3 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2350 | 94 | 2330 | 93 | 1 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 2500 | 2830 | 113 | 2540 | 102 | 11 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 2500 | 2300 | 92 | 2290 | 92 | 0 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2490 | 100 | 2480 | 99 | 0 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2530 | 101 | 2510 | 100 | 1 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 1770 | 71 | 1780 | 71 | 1 | 70-130/25 |
| 74-95-3 | Methylene bromide | 2500 | 2470 | 99 | 2480 | 99 | 0 | 70-130/25 |
| 75-09-2 | Methylene chloride | 2500 | 2590 | 104 | 2590 | 104 | 0 | 70-130/25 |
| 91-20-3 | Naphthalene | 2500 | 2130 | 85 | 2190 | 88 | 3 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 2500 | 2280 | 91 | 2270 | 91 | 0 | 70-130/25 |
| 100-42-5 | Styrene | 2500 | 2380 | 95 | 2390 | 96 | 0 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2440 | 98 | 2410 | 96 | 1 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2450 | 98 | 2450 | 98 | 0 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 2500 | 2530 | 101 | 2460 | 98 | 3 | 70-130/25 |
| 108-88-3 | Toluene | 2500 | 2460 | 98 | 2460 | 98 | 0 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 2010 | 80 | 2060 | 82 | 2 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2210 | 88 | 2230 | 89 | 1 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2390 | 96 | 2270 | 91 | 5 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2490 | 100 | 2480 | 99 | 0 | 70-130/25 |
| 79-01-6 | Trichloroethene | 2500 | 2480 | 99 | 2450 | 98 | 1 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2500 | 100 | 2370 | 95 | 5 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2410 | 96 | 2430 | 97 | 1 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2370 | 95 | 2350 | 94 | 1 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2330 | 93 | 2310 | 92 | 1 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 2500 | 2690 | 108 | 2700 | 108 | 0 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 2500 | 2760 | 110 | 2750 | 110 | 0 | 70-130/25 |
| | m,p-Xylene | 5000 | 4920 | 98 | 4820 | 96 | 2 | 70-130/25 |
| 95-47-6 | o-Xylene | 2500 | 2420 | 97 | 2390 | 96 | 1 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 7500 | 7350 | 98 | 7210 | 96 | 2 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSG4911-BS | G123682.D | 1 | 01/16/13 | JM | n/a | n/a | MSG4911 |
| MSG4911-BSD | G123683.D | 1 | 01/16/13 | JM | n/a | n/a | MSG4911 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-1

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | 97% | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | 94% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 87% | 87% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

6.3.1

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2185-BS | K66559.D | 1 | 01/18/13 | GK | n/a | n/a | MSK2185 |
| MSK2185-BSD | K66560.D | 1 | 01/18/13 | GK | n/a | n/a | MSK2185 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-3

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 60.3 | 121 | 56.2 | 112 | 7 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 186 | 74 | 207 | 83 | 11 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 58.9 | 118 | 58.4 | 117 | 1 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 53.3 | 107 | 55.5 | 111 | 4 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 56.5 | 113 | 60.6 | 121 | 7 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 52.1 | 104 | 53.2 | 106 | 2 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 52.5 | 105 | 53.7 | 107 | 2 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 48.7 | 97 | 51.4 | 103 | 5 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 51.4 | 103 | 51.0 | 102 | 1 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 56.4 | 113 | 55.7 | 111 | 1 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 64.1 | 128 | 66.3 | 133* a | 3 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 59.2 | 118 | 61.2 | 122 | 3 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 57.7 | 115 | 60.4 | 121 | 5 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 55.5 | 111 | 57.4 | 115 | 3 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 48.8 | 98 | 51.8 | 104 | 6 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 48.1 | 96 | 52.4 | 105 | 9 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 56.3 | 113 | 56.9 | 114 | 1 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 19.6 | 39* a | 19.4 | 39* a | 1 | 70-130/25 |
| 67-66-3 | Chloroform | 50 | 50.4 | 101 | 51.8 | 104 | 3 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 62.3 | 125 | 54.8 | 110 | 13 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 60.6 | 121 | 63.1 | 126 | 4 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 60.3 | 121 | 63.1 | 126 | 5 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 53.4 | 107 | 57.4 | 115 | 7 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 52.7 | 105 | 55.1 | 110 | 4 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 52.4 | 105 | 55.3 | 111 | 5 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 52.1 | 104 | 55.0 | 110 | 5 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 55.5 | 111 | 53.3 | 107 | 4 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 53.6 | 107 | 56.3 | 113 | 5 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 51.1 | 102 | 52.2 | 104 | 2 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 58.7 | 117 | 59.6 | 119 | 2 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 52.0 | 104 | 52.8 | 106 | 2 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 54.7 | 109 | 56.9 | 114 | 4 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 56.8 | 114 | 57.0 | 114 | 0 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 54.7 | 109 | 55.9 | 112 | 2 | 70-130/25 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 49.6 | 99 | 49.7 | 99 | 0 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 59.3 | 119 | 61.5 | 123 | 4 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2185-BS | K66559.D | 1 | 01/18/13 | GK | n/a | n/a | MSK2185 |
| MSK2185-BSD | K66560.D | 1 | 01/18/13 | GK | n/a | n/a | MSK2185 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-3

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 56.8 | 114 | 58.5 | 117 | 3 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 61.6 | 123 | 62.0 | 124 | 1 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 271 | 108 | 299 | 120 | 10 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 52.1 | 104 | 52.1 | 104 | 0 | 77-137/25 |
| 100-41-4 | Ethylbenzene | 50 | 59.0 | 118 | 62.9 | 126 | 6 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 51.0 | 102 | 55.1 | 110 | 8 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 57.7 | 115 | 52.3 | 105 | 10 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 58.3 | 117 | 60.9 | 122 | 4 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 59.9 | 120 | 62.6 | 125 | 4 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 57.0 | 114 | 57.4 | 115 | 1 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 53.2 | 106 | 52.7 | 105 | 1 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 53.1 | 106 | 53.7 | 107 | 1 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 54.9 | 110 | 55.0 | 110 | 0 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 51.0 | 102 | 51.4 | 103 | 1 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 62.1 | 124 | 64.6 | 129 | 4 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 55.3 | 111 | 58.7 | 117 | 6 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 50.7 | 101 | 55.2 | 110 | 8 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 60.5 | 121 | 60.5 | 121 | 0 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 52.0 | 104 | 57.9 | 116 | 11 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 58.9 | 118 | 61.6 | 123 | 4 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 51.7 | 103 | 53.5 | 107 | 3 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 53.6 | 107 | 55.5 | 111 | 3 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 49.7 | 99 | 50.3 | 101 | 1 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 54.9 | 110 | 55.5 | 111 | 1 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 51.8 | 104 | 54.1 | 108 | 4 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 51.0 | 102 | 52.1 | 104 | 2 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 61.8 | 124 | 59.4 | 119 | 4 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 55.2 | 110 | 57.3 | 115 | 4 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 55.0 | 110 | 56.6 | 113 | 3 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 53.9 | 108 | 55.7 | 111 | 3 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 52.6 | 105 | 48.7 | 97 | 8 | 70-130/25 |
| | m,p-Xylene | 100 | 120 | 120 | 128 | 128 | 6 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 56.8 | 114 | 60.2 | 120 | 6 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 176 | 117 | 188 | 125 | 7 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2185-BS | K66559.D | 1 | 01/18/13 | GK | n/a | n/a | MSK2185 |
| MSK2185-BSD | K66560.D | 1 | 01/18/13 | GK | n/a | n/a | MSK2185 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-3

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | 95% | 70-130% |
| 2037-26-5 | Toluene-D8 | 110% | 110% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 115% | 115% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

6.3.2

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC17550-1MS | G123696.D | 1 | 01/16/13 | JM | n/a | n/a | MSG4911 |
| MC17550-1MSD | G123697.D | 1 | 01/16/13 | JM | n/a | n/a | MSG4911 |
| MC17550-1 | G123686.D | 1 | 01/16/13 | JM | n/a | n/a | MSG4911 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-1

| CAS No. | Compound | MC17550-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 1310 | 1290 | 99 | 1300 | 99 | 1 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 6540 | 4400 | 67* [a] | 4510 | 69* [a] | 2 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 1310 | 1260 | 96 | 1300 | 99 | 3 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 1310 | 1240 | 95 | 1230 | 94 | 1 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 1310 | 1270 | 97 | 1270 | 97 | 0 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 1310 | 1320 | 101 | 1320 | 101 | 0 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 1310 | 1280 | 98 | 1300 | 99 | 2 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 1310 | 1190 | 91 | 1240 | 95 | 4 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 1310 | 1340 | 102 | 1330 | 102 | 1 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 1310 | 1400 | 107 | 1400 | 107 | 0 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 1310 | 1210 | 93 | 1200 | 92 | 1 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 1310 | 1170 | 89 | 1160 | 89 | 1 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 1310 | 1160 | 89 | 1010 | 77 | 14 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 1310 | 1280 | 98 | 1270 | 97 | 1 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 1310 | 1240 | 95 | 1230 | 94 | 1 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 1310 | 1260 | 96 | 1230 | 94 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 1310 | 1320 | 101 | 1280 | 98 | 3 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 1310 | 361 | 28 | 386 | 30 | 7 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 1310 | 1280 | 98 | 1260 | 96 | 2 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 1310 | 1470 | 112 | 1450 | 111 | 1 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 1310 | 1150 | 88 | 1140 | 87 | 1 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 1310 | 1220 | 93 | 1200 | 92 | 2 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 1310 | 1300 | 99 | 1290 | 99 | 1 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 1310 | 1210 | 93 | 1220 | 93 | 1 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 1310 | 1210 | 93 | 1200 | 92 | 1 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 1310 | 1280 | 98 | 1270 | 97 | 1 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 1310 | 1600 | 122 | 1560 | 119 | 3 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 1310 | 1310 | 100 | 1290 | 99 | 2 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 1310 | 1290 | 99 | 1290 | 99 | 0 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 1310 | 1430 | 109 | 1410 | 108 | 1 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 1310 | 1280 | 98 | 1270 | 97 | 1 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 1310 | 1310 | 100 | 1290 | 99 | 2 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 1310 | 1280 | 98 | 1270 | 97 | 1 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 1310 | 1280 | 98 | 1280 | 98 | 0 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 1310 | 1320 | 101 | 1260 | 96 | 5 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 1310 | 1250 | 96 | 1260 | 96 | 1 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC17550-1MS | G123696.D | 1 | 01/16/13 | JM | n/a | n/a | MSG4911 |
| MC17550-1MSD | G123697.D | 1 | 01/16/13 | JM | n/a | n/a | MSG4911 |
| MC17550-1 | G123686.D | 1 | 01/16/13 | JM | n/a | n/a | MSG4911 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-1

| CAS No. | Compound | MC17550-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 1310 | 1260 | 96 | 1280 | 98 | 2 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 1310 | 1360 | 104 | 1370 | 105 | 1 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 6540 | 5070 | 78 | 4820 | 74 | 5 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 1310 | 1290 | 99 | 1310 | 100 | 2 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 1310 | 1290 | 99 | 1250 | 96 | 3 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 1310 | 1180 | 90 | 1210 | 93 | 3 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 1310 | 1260 | 96 | 1270 | 97 | 1 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 1310 | 1180 | 90 | 1170 | 89 | 1 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 1310 | 1270 | 97 | 1270 | 97 | 0 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 1310 | 1340 | 102 | 1360 | 104 | 1 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 1310 | 948 | 72 | 983 | 75 | 4 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 1310 | 1300 | 99 | 1290 | 99 | 1 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 1310 | 1340 | 102 | 1360 | 104 | 1 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 1310 | 1130 | 86 | 1210 | 93 | 7 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 1310 | 1170 | 89 | 1150 | 88 | 2 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 1310 | 1250 | 96 | 1230 | 94 | 2 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 1310 | 1260 | 96 | 1250 | 96 | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 1310 | 1300 | 99 | 1320 | 101 | 2 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 1310 | 1300 | 99 | 1270 | 97 | 2 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 1310 | 1270 | 97 | 1270 | 97 | 0 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 1310 | 1030 | 79 | 1120 | 86 | 8 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 1310 | 1140 | 87 | 1200 | 92 | 5 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 1310 | 1240 | 95 | 1190 | 91 | 4 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 1310 | 1310 | 100 | 1320 | 101 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 1310 | 1260 | 96 | 1240 | 95 | 2 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 1310 | 1310 | 100 | 1300 | 99 | 1 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 1310 | 1270 | 97 | 1320 | 101 | 4 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 1310 | 1200 | 92 | 1180 | 90 | 2 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 1310 | 1200 | 92 | 1200 | 92 | 0 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 1310 | 1480 | 113 | 1480 | 113 | 0 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 1310 | 1500 | 115 | 1090 | 83 | 32* [b] | 70-130/30 |
| | m,p-Xylene | ND | | 2620 | 2530 | 97 | 2480 | 95 | 2 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 1310 | 1260 | 96 | 1230 | 94 | 2 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 3920 | 3800 | 97 | 3710 | 95 | 2 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC17550-1MS | G123696.D | 1 | 01/16/13 | JM | n/a | n/a | MSG4911 |
| MC17550-1MSD | G123697.D | 1 | 01/16/13 | JM | n/a | n/a | MSG4911 |
| MC17550-1 | G123686.D | 1 | 01/16/13 | JM | n/a | n/a | MSG4911 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-1

| CAS No. | Surrogate Recoveries | MS | MSD | MC17550-1 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromoflnoromethane | 93% | 94% | 86% | 70-130% |
| 2037-26-5 | Toluene-D8 | 90% | 90% | 85% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 83% | 82% | 79% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) High RPD dne to possible matrix interference and/or sample non-homogeneity.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC17443-1MS | M53468.D | 1 | 01/16/13 | AMY | n/a | n/a | MSM1817 |
| MC17443-1MSD | M53469.D | 1 | 01/16/13 | AMY | n/a | n/a | MSM1817 |
| MC17443-1 | M53461.D | 1 | 01/16/13 | AMY | n/a | n/a | MSM1817 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-2

| CAS No. | Compound | MC17443-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 214 | | 64.4 | 182 | -50* [a] | 192 | -33* [a] | 5 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 322 | 278 | 86 | 246 | 73 | 12 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 64.4 | 66.3 | 103 | 68.5 | 102 | 3 | 70-130/30 |
| 71-43-2 | Benzene | 1.7 | | 64.4 | 51.9 | 78 | 59.3 | 86 | 13 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 64.4 | 34.2 | 53* [b] | 39.3 | 58* [b] | 14 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 64.4 | 57.7 | 90 | 64.9 | 96 | 12 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 64.4 | 49.5 | 77 | 55.7 | 83 | 12 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 64.4 | 37.4 | 58* [b] | 41.4 | 61* [b] | 10 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 64.4 | 61.6 | 96 | 68.8 | 102 | 11 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | 30.3 | | 64.4 | 65.6 | 55* [b] | 75.6 | 67* [b] | 14 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 64.4 | 38.5 | 60* [b] | 43.6 | 65* [b] | 12 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 64.4 | 38.1 | 59* [b] | 43.2 | 64* [b] | 13 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 64.4 | 36.9 | 57* [b] | 41.8 | 62* [b] | 12 | 70-130/30 |
| 75-15-0 | Carbon disulfide | 1.1 | | 64.4 | 61.2 | 93 | 70.5 | 103 | 14 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 64.4 | 53.1 | 82 | 61.7 | 92 | 15 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 64.4 | 37.5 | 58* [b] | 43.4 | 64* [b] | 15 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 64.4 | 61.1 | 95 | 70.8 | 105 | 15 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 64.4 | 45.6 | 71 | 45.2 | 67 | 1 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 64.4 | 56.2 | 87 | 63.7 | 95 | 13 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 64.4 | 70.1 | 109 | 79.1 | 117 | 12 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 64.4 | 34.0 | 53* [b] | 39.5 | 59* [b] | 15 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 64.4 | 34.7 | 54* [b] | 39.3 | 58* [b] | 12 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 64.4 | 42.8 | 66* [b] | 47.4 | 70 | 10 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 64.4 | 26.7 | 41* [b] | 30.1 | 45* [b] | 12 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 64.4 | 30.3 | 47* [b] | 34.2 | 51* [b] | 12 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 64.4 | 30.3 | 47* [b] | 33.9 | 50* [b] | 11 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 64.4 | 74.8 | 116 | 84.8 | 126 | 13 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 64.4 | 58.2 | 90 | 66.7 | 99 | 14 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 64.4 | 51.6 | 80 | 57.6 | 86 | 11 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 64.4 | 63.4 | 98 | 73.0 | 108 | 14 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 64.4 | 55.7 | 86 | 63.4 | 94 | 13 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 64.4 | 55.8 | 87 | 65.4 | 97 | 16 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 64.4 | 49.8 | 77 | 56.6 | 84 | 13 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 64.4 | 44.6 | 69* [b] | 48.3 | 72 | 8 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 64.4 | 60.2 | 93 | 69.4 | 103 | 14 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 64.4 | 53.6 | 83 | 61.5 | 91 | 14 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC17443-1MS | M53468.D | 1 | 01/16/13 | AMY | n/a | n/a | MSM1817 |
| MC17443-1MSD | M53469.D | 1 | 01/16/13 | AMY | n/a | n/a | MSM1817 |
| MC17443-1 | M53461.D | 1 | 01/16/13 | AMY | n/a | n/a | MSM1817 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-2

| CAS No. | Compound | MC17443-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 64.4 | 48.2 | 75 | 53.3 | 79 | 10 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 64.4 | 49.4 | 77 | 55.0 | 82 | 11 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 322 | 342 | 106 | 352 | 105 | 3 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 64.4 | 57.2 | 89 | 62.1 | 92 | 8 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 0.29 | | 64.4 | 42.3 | 65* b | 48.4 | 71 | 13 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 64.4 | 35.8 | 56* b | 37.9 | 56* b | 6 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 64.4 | 54.3 | 84 | 60.4 | 90 | 11 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 64.4 | 39.4 | 61* b | 45.6 | 68* b | 15 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 64.4 | 39.8 | 62* b | 45.1 | 67* b | 12 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 64.4 | 57.7 | 90 | 64.1 | 95 | 11 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 64.4 | 63.4 | 98 | 67.4 | 100 | 6 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 64.4 | 51.5 | 80 | 56.3 | 84 | 9 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 64.4 | 61.3 | 95 | 67.9 | 101 | 10 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 64.4 | 16.2 | 25* b | 17.6 | 26* b | 8 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 64.4 | 38.3 | 59* b | 44.0 | 65* b | 14 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 64.4 | 34.4 | 53* b | 37.7 | 56* b | 9 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 64.4 | 41.0 | 64* b | 46.2 | 69* b | 12 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 64.4 | 37.2 | 58* b | 41.3 | 61* b | 10 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 64.4 | 44.8 | 70 | 51.6 | 77 | 14 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 64.4 | 50.0 | 78 | 57.4 | 85 | 14 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 64.4 | 18.3 | 28* b | 18.5 | 27* b | 1 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 64.4 | 23.1 | 36* b | 23.4 | 35* b | 1 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 64.4 | 58.5 | 91 | 67.7 | 101 | 15 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 64.4 | 49.7 | 77 | 54.0 | 80 | 8 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 64.4 | 50.8 | 79 | 59.1 | 88 | 15 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 64.4 | 62.8 | 97 | 73.4 | 109 | 16 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 64.4 | 40.7 | 63* b | 44.4 | 66* b | 9 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.3 | | 64.4 | 36.5 | 55* b | 41.8 | 60* b | 14 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 0.53 | | 64.4 | 37.4 | 57* b | 42.4 | 62* b | 13 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 64.4 | 54.9 | 85 | 57.3 | 85 | 4 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 64.4 | 60.2 | 93 | 67.8 | 101 | 12 | 70-130/30 |
| | m,p-Xylene | 2.8 | | 129 | 83.8 | 63* b | 96.1 | 69* b | 14 | 70-130/30 |
| 95-47-6 | o-Xylene | 0.83 | | 64.4 | 38.7 | 59* b | 45.0 | 66* b | 15 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 3.7 | | 193 | 123 | 62* b | 141 | 68* b | 14 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC17443-1MS | M53468.D | 1 | 01/16/13 | AMY | n/a | n/a | MSM1817 |
| MC17443-1MSD | M53469.D | 1 | 01/16/13 | AMY | n/a | n/a | MSM1817 |
| MC17443-1 | M53461.D | 1 | 01/16/13 | AMY | n/a | n/a | MSM1817 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-2

| CAS No. | Surrogate Recoveries | MS | MSD | MC17443-1 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 104% | 101% | 101% | 70-130% |
| 2037-26-5 | Toluene-D8 | 108% | 107% | 108% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | 98% | 96% | 70-130% |

(a) Outside control limits due to high level in sample relative to spike amount.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC17426-3MS | K66580.D | 1 | 01/18/13 | GK | n/a | n/a | MSK2185 |
| MC17426-3MSD | K66581.D | 1 | 01/18/13 | GK | n/a | n/a | MSK2185 |
| MC17426-3 | K66570.D | 1 | 01/18/13 | GK | n/a | n/a | MSK2185 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-3

| CAS No. | Compound | MC17426-3 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 50 | 48.4 | 97 | 47.4 | 95 | 2 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 250 | 1030 | 412* [a] | 643 | 257* [a] | 46* [b] | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 50 | 50.8 | 102 | 52.8 | 106 | 4 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 50 | 52.5 | 105 | 51.6 | 103 | 2 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 50 | 52.7 | 105 | 52.1 | 104 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 50 | 48.8 | 98 | 49.6 | 99 | 2 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 50 | 48.2 | 96 | 47.9 | 96 | 1 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 50 | 40.4 | 81 | 40.2 | 80 | 0 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 50 | 46.4 | 93 | 49.5 | 99 | 6 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 50 | 46.5 | 93 | 48.4 | 97 | 4 | 70-130/30 |
| 104-51-8 | n-Bntylbenzene | ND | | 50 | 53.6 | 107 | 55.0 | 110 | 3 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 50 | 52.3 | 105 | 53.0 | 106 | 1 | 70-130/30 |
| 98-06-6 | tert-Bntylbenzene | ND | | 50 | 52.6 | 105 | 52.7 | 105 | 0 | 70-130/30 |
| 75-15-0 | Carbon disnlfide | ND | | 50 | 50.3 | 101 | 51.7 | 103 | 3 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 50 | 45.6 | 91 | 46.8 | 94 | 3 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 50 | 46.6 | 93 | 46.2 | 92 | 1 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 50 | 53.3 | 107 | 56.5 | 113 | 6 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 50 | ND | 0* [a] | ND | 0* [a] | nc | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 50 | 47.9 | 96 | 49.0 | 98 | 2 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 50 | 48.1 | 96 | 53.8 | 108 | 11 | 70-130/30 |
| 95-49-8 | o-Chlorotolnene | ND | | 50 | 54.6 | 109 | 54.5 | 109 | 0 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 50 | 53.8 | 108 | 53.8 | 108 | 0 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 50 | 46.2 | 92 | 45.9 | 92 | 1 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 50 | 48.6 | 97 | 49.0 | 98 | 1 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 50 | 48.9 | 98 | 48.3 | 97 | 1 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 50 | 48.4 | 97 | 48.2 | 96 | 0 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 50 | 46.3 | 93 | 50.6 | 101 | 9 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 50 | 52.5 | 105 | 52.9 | 106 | 1 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 50 | 47.9 | 96 | 47.1 | 94 | 2 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 50 | 55.8 | 112 | 56.1 | 112 | 1 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 50 | 50.6 | 101 | 51.1 | 102 | 1 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 50 | 51.9 | 104 | 52.0 | 104 | 0 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 50 | 53.2 | 106 | 54.3 | 109 | 2 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 50 | 50.4 | 101 | 49.8 | 100 | 1 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 50 | 42.7 | 85 | 42.9 | 86 | 0 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 50 | 56.9 | 114 | 55.2 | 110 | 3 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC17426-3MS | K66580.D | 1 | 01/18/13 | GK | n/a | n/a | MSK2185 |
| MC17426-3MSD | K66581.D | 1 | 01/18/13 | GK | n/a | n/a | MSK2185 |
| MC17426-3 | K66570.D | 1 | 01/18/13 | GK | n/a | n/a | MSK2185 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-3

| CAS No. | Compound | MC17426-3 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 50 | 51.2 | 102 | 50.6 | 101 | 1 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 50 | 51.3 | 103 | 50.7 | 101 | 1 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 250 | 254 | 102 | 225 | 90 | 12 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 50 | 41.7 | 83 | 41.0 | 82 | 2 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 50 | 52.8 | 106 | 53.0 | 106 | 0 | 70-130/30 |
| 87-68-3 | Hexachlorohutadiene | ND | | 50 | 46.9 | 94 | 48.8 | 98 | 4 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 50 | 46.3 | 93 | 47.5 | 95 | 3 | 70-130/30 |
| 98-82-8 | Isopropylhenzene | ND | | 50 | 52.0 | 104 | 52.4 | 105 | 1 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 50 | 50.0 | 100 | 50.5 | 101 | 1 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 50 | 51.3 | 103 | 52.9 | 106 | 3 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 50 | 47.7 | 95 | 46.9 | 94 | 2 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 50 | 48.7 | 97 | 48.4 | 97 | 1 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 50 | 51.5 | 103 | 52.9 | 106 | 3 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 50 | 44.3 | 89 | 44.9 | 90 | 1 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 50 | 53.8 | 108 | 54.5 | 109 | 1 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 50 | 21.1 | 42* [a] | 20.8 | 42* [a] | 1 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 50 | 48.5 | 97 | 49.5 | 99 | 2 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 50 | 52.4 | 105 | 51.8 | 104 | 1 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 50 | 49.5 | 99 | 48.8 | 98 | 1 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 50 | 54.5 | 109 | 53.8 | 108 | 1 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 50 | 45.2 | 90 | 48.1 | 96 | 6 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorohenzene | ND | | 50 | 48.1 | 96 | 50.6 | 101 | 5 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 50 | 47.6 | 95 | 48.4 | 97 | 2 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 50 | 49.8 | 100 | 49.9 | 100 | 0 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 50 | 50.2 | 100 | 49.1 | 98 | 2 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 50 | 48.4 | 97 | 49.2 | 98 | 2 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 50 | 51.0 | 102 | 50.4 | 101 | 1 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 50 | 35.8 | 72 | 36.2 | 72 | 1 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 50 | 36.2 | 72 | 36.2 | 72 | 0 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 50 | 42.2 | 84 | 42.1 | 84 | 0 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 50 | 42.9 | 86 | 46.3 | 93 | 8 | 70-130/30 |
| | m,p-Xylene | ND | | 100 | 98.4 | 98 | 97.6 | 98 | 1 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 50 | 47.2 | 94 | 47.1 | 94 | 0 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 150 | 146 | 97 | 145 | 97 | 1 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC17426-3MS | K66580.D | 1 | 01/18/13 | GK | n/a | n/a | MSK2185 |
| MC17426-3MSD | K6658I.D | 1 | 01/18/13 | GK | n/a | n/a | MSK2185 |
| MC17426-3 | K66570.D | 1 | 01/18/13 | GK | n/a | n/a | MSK2185 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC17501-3

| CAS No. | Surrogate Recoveries | MS | MSD | MC17426-3 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | 100% | 117% | 70-130% |
| 2037-26-5 | Toluene-D8 | 109% | 108% | 107% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 111% | 111% | 109% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) High RPD due to possible matrix interference and/or sample non-homogeneity.

* = Outside of Control Limits.

# Volatile Internal Standard Area Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSG4911-CC4894 | Injection Date: | 01/16/13 |
| Lab File ID: | G123681.D | Injection Time: | 08:40 |
| Instrument ID: | GCMSG | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 204174 | 5.13 | 278872 | 6.27 | 138756 | 9.62 | 145466 | 12.25 | 38370 | 3.10 |
| Upper Limit [a] | 408348 | 5.63 | 557744 | 6.77 | 277512 | 10.12 | 290932 | 12.75 | 76740 | 3.60 |
| Lower Limit [b] | 102087 | 4.63 | 139436 | 5.77 | 69378 | 9.12 | 72733 | 11.75 | 19185 | 2.60 |
| Lab Sample ID | IS I AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSG4911-BS | 204969 | 5.13 | 277922 | 6.27 | 137661 | 9.62 | 145992 | 12.25 | 38916 | 3.10 |
| MSG4911-BSD | 205136 | 5.13 | 276932 | 6.27 | 139125 | 9.62 | 145048 | 12.25 | 38501 | 3.10 |
| MSG4911-MB | 201260 | 5.13 | 276257 | 6.27 | 137814 | 9.62 | 140495 | 12.25 | 37175 | 3.10 |
| MC17550-1 | 202254 | 5.13 | 276256 | 6.27 | 138782 | 9.62 | 141038 | 12.25 | 37895 | 3.09 |
| ZZZZZZ | 194996 | 5.13 | 266221 | 6.27 | 135995 | 9.62 | 137743 | 12.25 | 40303 | 3.12 |
| ZZZZZZ | 197255 | 5.13 | 271453 | 6.27 | 138064 | 9.62 | 138383 | 12.25 | 39108 | 3.12 |
| ZZZZZZ | 198996 | 5.13 | 272354 | 6.27 | 136977 | 9.62 | 142475 | 12.25 | 41740 | 3.12 |
| ZZZZZZ | 199564 | 5.13 | 272876 | 6.27 | 138196 | 9.62 | 141282 | 12.25 | 41579 | 3.12 |
| ZZZZZZ | 199314 | 5.13 | 274665 | 6.27 | 138321 | 9.62 | 144127 | 12.25 | 44366 | 3.12 |
| ZZZZZZ | 199200 | 5.13 | 271298 | 6.27 | 143546 | 9.63 | 142947 | 12.25 | 40441 | 3.12 |
| ZZZZZZ | 202760 | 5.13 | 278826 | 6.27 | 145509 | 9.63 | 173066 | 12.27 | 43899 | 3.10 |
| MC17501-1 | 204817 | 5.13 | 283360 | 6.27 | 144232 | 9.62 | 148833 | 12.25 | 40932 | 3.10 |
| ZZZZZZ | 201785 | 5.13 | 276943 | 6.27 | 137333 | 9.62 | 143681 | 12.25 | 45007 | 3.10 |
| MC17550-1MS | 208240 | 5.13 | 285163 | 6.27 | 141138 | 9.62 | 151352 | 12.25 | 39877 | 3.10 |
| MC17550-1MSD | 206113 | 5.13 | 280680 | 6.27 | 140878 | 9.62 | 149740 | 12.25 | 43484 | 3.10 |
| ZZZZZZ | 199339 | 5.13 | 272150 | 6.27 | 135904 | 9.62 | 140290 | 12.25 | 41682 | 3.12 |
| ZZZZZZ | 200851 | 5.13 | 273303 | 6.27 | 136074 | 9.62 | 140950 | 12.25 | 43600 | 3.12 |
| ZZZZZZ | 199888 | 5.13 | 275205 | 6.27 | 137981 | 9.62 | 142168 | 12.25 | 41677 | 3.11 |
| ZZZZZZ | 201123 | 5.13 | 277442 | 6.27 | 137982 | 9.62 | 142327 | 12.25 | 42559 | 3.11 |
| ZZZZZZ | 198921 | 5.13 | 275070 | 6.27 | 136479 | 9.62 | 140328 | 12.25 | 41153 | 3.11 |
| ZZZZZZ | 200667 | 5.13 | 274596 | 6.27 | 136645 | 9.62 | 139929 | 12.25 | 43428 | 3.12 |
| ZZZZZZ | 197555 | 5.13 | 273633 | 6.27 | 152222 | 9.63 | 145306 | 12.25 | 44997 | 3.12 |

IS 1 = Pentaflnorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minntes.

6.5.1

# Volatile Internal Standard Area Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSK2185-CC2177 | Injection Date: | 01/18/13 |
| Lab File ID: | K66558.D | Injection Time: | 08:14 |
| Instrument ID: | GCMSK | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 137065 | 8.81 | 216460 | 9.66 | 101801 | 12.92 | 112679 | 15.48 | 24791 | 6.41 |
| Upper Limit [a] | 274130 | 9.31 | 432920 | 10.16 | 203602 | 13.42 | 225358 | 15.98 | 49582 | 6.91 |
| Lower Limit [b] | 68533 | 8.31 | 108230 | 9.16 | 50901 | 12.42 | 56340 | 14.98 | 12396 | 5.91 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSK2185-BS | 147931 | 8.81 | 226531 | 9.66 | 106337 | 12.92 | 112907 | 15.48 | 27458 | 6.41 |
| MSK2185-BSD | 152682 | 8.82 | 226160 | 9.66 | 104335 | 12.92 | 113024 | 15.48 | 26033 | 6.40 |
| MSK2185-MB | 139125 | 8.81 | 216702 | 9.66 | 94343 | 12.92 | 105306 | 15.48 | 22749 | 6.40 |
| ZZZZZZ | 133050 | 8.81 | 209488 | 9.66 | 92172 | 12.92 | 101073 | 15.48 | 20263 | 6.40 |
| ZZZZZZ | 133518 | 8.81 | 211829 | 9.66 | 92432 | 12.92 | 100034 | 15.48 | 24513 | 6.40 |
| MC17501-3 | 134134 | 8.82 | 217149 | 9.66 | 93378 | 12.92 | 99127 | 15.48 | 20983 | 6.40 |
| ZZZZZZ | 127032 | 8.82 | 203387 | 9.66 | 90163 | 12.92 | 94173 | 15.48 | 18547 | 6.40 |
| ZZZZZZ | 126200 | 8.81 | 200730 | 9.66 | 86330 | 12.92 | 94730 | 15.48 | 19795 | 6.40 |
| ZZZZZZ | 113366 | 8.82 | 181608 | 9.66 | 83092 | 12.92 | 89292 | 15.48 | 21657 | 6.40 |
| ZZZZZZ | 114113 | 8.82 | 182911 | 9.66 | 82818 | 12.92 | 88788 | 15.48 | 17714 | 6.40 |
| MC17426-3 | 112353 | 8.81 | 184024 | 9.66 | 81710 | 12.92 | 87679 | 15.48 | 17972 | 6.40 |
| ZZZZZZ | 131010 | 8.82 | 201397 | 9.66 | 87909 | 12.92 | 97857 | 15.48 | 21365 | 6.41 |
| MC17455-1 | 120354 | 8.82 | 196271 | 9.67 | 87937 | 12.92 | 90309 | 15.48 | 20784 | 6.40 |
| ZZZZZZ | 127273 | 8.82 | 201375 | 9.66 | 97075 | 12.92 | 102476 | 15.48 | 21261 | 6.41 |
| ZZZZZZ | 129531 | 8.81 | 205033 | 9.66 | 93102 | 12.92 | 101245 | 15.48 | 20221 | 6.40 |
| ZZZZZZ | 128016 | 8.81 | 196723 | 9.66 | 95138 | 12.92 | 102135 | 15.48 | 21948 | 6.41 |
| ZZZZZZ | 134180 | 8.82 | 210828 | 9.66 | 96789 | 12.92 | 109169 | 15.48 | 22355 | 6.40 |
| ZZZZZZ | 139428 | 8.81 | 223875 | 9.66 | 101383 | 12.92 | 113203 | 15.48 | 23839 | 6.40 |
| ZZZZZZ | 152190 | 8.81 | 233406 | 9.66 | 106935 | 12.92 | 118544 | 15.48 | 27702 | 6.41 |
| ZZZZZZ | 156163 | 8.82 | 246206 | 9.66 | 106371 | 12.92 | 118787 | 15.48 | 28720 | 6.40 |
| MC17426-3MS | 148401 | 8.81 | 227691 | 9.66 | 107444 | 12.92 | 116451 | 15.48 | 25151 | 6.40 |
| MC17426-3MSD | 143124 | 8.81 | 222873 | 9.66 | 104949 | 12.92 | 114352 | 15.48 | 23802 | 6.40 |
| MC17455-1MS | 145432 | 8.81 | 226179 | 9.66 | 105485 | 12.92 | 115026 | 15.48 | 26925 | 6.41 |
| MC17455-1MSD | 152102 | 8.81 | 235521 | 9.66 | 109425 | 12.92 | 118936 | 15.48 | 30432 | 6.41 |
| ZZZZZZ | 149849 | 8.81 | 234725 | 9.66 | 113598 | 12.92 | 121963 | 15.48 | 27884 | 6.40 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minntes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1817-CC1815 | Injection Date: | 01/16/13 |
| Lab File ID: | M53454.D | Injection Time: | 09:09 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 454411 | 9.36 | 725588 | 10.24 | 404992 | 13.52 | 511263 | 16.08 | 338837 | 6.86 |
| Upper Limit [a] | 908822 | 9.86 | 1451176 | 10.74 | 809984 | 14.02 | 1022526 | 16.58 | 677674 | 7.36 |
| Lower Limit [b] | 227206 | 8.86 | 362794 | 9.74 | 202496 | 13.02 | 255632 | 15.58 | 169419 | 6.36 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1817-BS | 470319 | 9.36 | 749524 | 10.24 | 426397 | 13.52 | 521342 | 16.08 | 352192 | 6.86 |
| MSM1817-MB | 482627 | 9.36 | 751598 | 10.24 | 407690 | 13.52 | 505298 | 16.08 | 166786[c] | 6.86 |
| ZZZZZZ | 492730 | 9.36 | 772644 | 10.24 | 423346 | 13.52 | 499932 | 16.08 | 295144 | 6.86 |
| ZZZZZZ | 476279 | 9.36 | 751015 | 10.24 | 415602 | 13.52 | 505810 | 16.08 | 326981 | 6.86 |
| ZZZZZZ | 497440 | 9.36 | 774211 | 10.24 | 419040 | 13.52 | 526505 | 16.08 | 293458 | 6.86 |
| MC17443-1 | 498515 | 9.36 | 768827 | 10.24 | 418448 | 13.52 | 525984 | 16.08 | 276080 | 6.86 |
| ZZZZZZ | 478756 | 9.36 | 748964 | 10.24 | 408161 | 13.52 | 512878 | 16.08 | 283302 | 6.85 |
| ZZZZZZ | 503632 | 9.36 | 790524 | 10.24 | 433263 | 13.52 | 565631 | 16.08 | 261460 | 6.86 |
| ZZZZZZ | 406012 | 9.36 | 637108 | 10.24 | 348701 | 13.52 | 414585 | 16.08 | 237695 | 6.85 |
| ZZZZZZ | 508099 | 9.36 | 778317 | 10.24 | 424681 | 13.52 | 549064 | 16.08 | 244509 | 6.85 |
| ZZZZZZ | 485821 | 9.36 | 767795 | 10.24 | 430282 | 13.52 | 583505 | 16.08 | 273382 | 6.86 |
| ZZZZZZ | 277753 | 9.36 | 427897 | 10.24 | 228166 | 13.52 | 287907 | 16.08 | 97418[c] | 6.85 |
| MC17443-1MS | 493394 | 9.36 | 786390 | 10.24 | 437101 | 13.52 | 531386 | 16.08 | 324484 | 6.86 |
| MC17443-1MSD | 506242 | 9.36 | 804953 | 10.24 | 444754 | 13.52 | 527444 | 16.08 | 313455 | 6.86 |
| MC17501-2 | 485590 | 9.36 | 763820 | 10.24 | 414265 | 13.52 | 521773 | 16.08 | 276604 | 6.85 |
| ZZZZZZ | 496081 | 9.35 | 776131 | 10.24 | 421718 | 13.52 | 534611 | 16.08 | 243017 | 6.86 |
| ZZZZZZ | 12689[d] | 9.36 | 17600[d] | 10.24 | 9365[d] | 13.52 | 13512[d] | 16.08 | 3204[d] | 6.93 |
| ZZZZZZ | 491689 | 9.36 | 770133 | 10.24 | 423795 | 13.52 | 545917 | 16.08 | 174756 | 6.91 |
| ZZZZZZ | 488181 | 9.36 | 756891 | 10.24 | 411402 | 13.52 | 509534 | 16.08 | 215169 | 6.85 |
| ZZZZZZ | 485138 | 9.36 | 753432 | 10.24 | 416963 | 13.52 | 528316 | 16.08 | 106282[c] | 6.86 |
| ZZZZZZ | 490459 | 9.36 | 757837 | 10.24 | 412027 | 13.52 | 531665 | 16.08 | 50371[d] | 6.86 |
| ZZZZZZ | 501445 | 9.36 | 783112 | 10.24 | 416348 | 13.52 | 528638 | 16.08 | 39571[d] | 6.86 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minntes.
(c) Outside control limits. Target analytes not associated with this internal standard.
(d) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

6.5.3

# Volatile Surrogate Recovery Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC17501-3 | K66565.D | 114.0 | 107.0 | 113.0 |
| MC17426-3MS | K66580.D | 99.0 | 109.0 | 111.0 |
| MC17426-3MSD | K66581.D | 100.0 | 108.0 | 111.0 |
| MSK2185-BS | K66559.D | 98.0 | 110.0 | 115.0 |
| MSK2185-BSD | K66560.D | 95.0 | 110.0 | 115.0 |
| MSK2185-MB | K66562.D | 107.0 | 109.0 | 108.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

6.6.1

# Volatile Surrogate Recovery Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Method: SW846 8260B | Matrix: SO |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC17501-1 | G123694.D | 87.0 | 85.0 | 80.0 |
| MC17501-2 | M53471.D | 99.0 | 108.0 | 98.0 |
| MC17443-1MS | M53468.D | 104.0 | 108.0 | 97.0 |
| MC17443-1MSD | M53469.D | 101.0 | 107.0 | 98.0 |
| MC17550-1MS | G123696.D | 93.0 | 90.0 | 83.0 |
| MC17550-1MSD | G123697.D | 94.0 | 90.0 | 82.0 |
| MSG4911-BS | G123682.D | 98.0 | 95.0 | 87.0 |
| MSG4911-BSD | G123683.D | 97.0 | 94.0 | 87.0 |
| MSG4911-MB | G123685.D | 87.0 | 84.0 | 78.0 |
| MSM1817-BS | M53455.D | 102.0 | 109.0 | 95.0 |
| MSM1817-MB | M53457.D | 99.0 | 108.0 | 95.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

6.6.2

New England ACCUTEST LABORATORIES

## GC Volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31778-MB | YZ78059.D | 1 | 01/24/13 | CZ | 01/23/13 | OP31778 | GYZ7026 |

The QC reported here applies to the following samples: Method: SW846 8011

MC17501-1, MC17501-2



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 2.5 | 1.1 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.5 | 0.95 | ug/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 106% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 593%* [a] | 61-167% |

(a) Outside control limits. Associated samples are non-detect for target analytes.

# Blank Spike Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31778-BS | YZ78060.D | 1 | 01/24/13 | CZ | 01/23/13 | OP31778 | GYZ7026 |

The QC reported here applies to the following samples: Method: SW846 8011

MC17501-1, MC17501-2

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 32.9 | 33.1 | 101 | 59-142 |
| 106-93-4 | 1,2-Dibromoethane | 32.9 | 35.8 | 109 | 56-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 80% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 542%* [a] | 61-167% |

(a) Outside control limits. Associated samples are non-detect for target analytes.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31778-MS | YZ78061.D | 1 | 01/24/13 | CZ | 01/23/13 | OP31778 | GYZ7026 |
| OP31778-MSD | YZ78062.D | 1 | 01/24/13 | CZ | 01/23/13 | OP31778 | GYZ7026 |
| MC17501-2 | YZ78063.D | 1 | 01/24/13 | CZ | 01/23/13 | OP31778 | GYZ7026 |

The QC reported here applies to the following samples: Method: SW846 8011

MC17501-1, MC17501-2



| CAS No. | Compound | MC17501-2 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 37.9 | 38.4 | 101 | 46.8 | 122 | 20 | 40-156/27 |
| 106-93-4 | 1,2-Dihromoethane | ND | | 37.9 | 40.1 | 106 | 48.5 | 126 | 19 | 48-141/27 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC17501-2 | Limits |
|---|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 126% | 117% | 154% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 479%* [a] | 497%* [a] | 625%* [a] | 61-167% |

(a) Outside control limits.Sample is non-detect for target analytes.

* = Outside of Control Limits.

# Volatile Surrogate Recovery Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Method: SW846 8011 | Matrix: SO |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] | S1 [b] |
|---|---|---|---|
| MC17501-1 | YZ78064.D | 142.0 | 298.0* [c] |
| MC17501-2 | YZ78063.D | 154.0 | 625.0* [c] |
| OP31778-BS | YZ78060.D | 80.0 | 542.0* [d] |
| OP31778-MB | YZ78059.D | 106.0 | 593.0* [d] |
| OP31778-MS | YZ78061.D | 126.0 | 479.0* [c] |
| OP31778-MSD | YZ78062.D | 117.0 | 497.0* [c] |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Bromofluorobenzene (S) | 61-167% |

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2
(c) Outside control limits.Sample is non-detect for target analytes.
(d) Outside control limits. Associated samples are non-detect for target analytes.

# GC Surrogate Retention Time Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GYZ7026-CC7014 | Injection Date: | 01/24/13 |
| Lab File ID: | YZ78058.D | Injection Time: | 09:04 |
| Instrument ID: | GCYZ | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 3.48 | 3.76 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| OP31778-MB | YZ78059.D | 01/24/13 | 10:05 | 3.49 | 3.76 |
| OP31778-BS | YZ78060.D | 01/24/13 | 10:30 | 3.49 | 3.76 |
| OP31778-MS | YZ78061.D | 01/24/13 | 10:55 | 3.48 | 3.76 |
| OP31778-MSD | YZ78062.D | 01/24/13 | 11:20 | 3.48 | 3.76 |
| MC17501-2 | YZ78063.D | 01/24/13 | 11:45 | 3.48 | 3.76 |
| MC17501-1 | YZ78064.D | 01/24/13 | 12:10 | 3.48 | 3.76 |
| GYZ7026-ECC701 | YZ78065.D | 01/24/13 | 12:37 | 3.48 | 3.76 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

7.5.1

7

New England ACCUTEST LABORATORIES

## General Chemistry

## QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC17501
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Sample: MC17501-1 | Analyzed: 16-JAN-13 by HS | | Method: SM21 2540 B MOD. |
| ClientID: P-55R-43 | | | |
| Wet Weight (Total) | 28.236 | g | |
| Tare Weight | 23.203 | g | |
| Dry Weight (Total) | 26.42 | g | |
| Solids, Percent | 63.9 | % | |

| | | | |
|---|---|---|---|
| Sample: MC17501-2 | Analyzed: 16-JAN-13 by HS | | Method: SM21 2540 B MOD. |
| ClientID: P-55R-51 | | | |
| Wet Weight (Total) | 34.514 | g | |
| Tare Weight | 23.938 | g | |
| Dry Weight (Total) | 32.995 | g | |
| Solids, Percent | 85.6 | % | |

8.1

8

# Roxana Drilling 2013 Data Review

**Laboratory SDG: MC16798**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 2/28/2013**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| VMP-47-12 | VMP-47-19 |
| VMP-47-29 | TRIP BLANK |
| VMP-48-13 | VMP-48-21 |
| VMP-48-27 | VMP-50-13 |
| VMP-50-21 | VMP-50-21-Dup |
| VMP-50-29 | |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS recoveries were outside evaluation criteria. VOC by 8011 surrogate recovery for bromofluorobenzene was outside evaluation criteria in sample VMP-50-21. The initial calibration verification recovery for acetone exceeded 50 percent difference (%D). The continuing calibration verification recovery for 2-chloroethyl vinyl ether and acrolein exceeded 50 percent difference (%D). Acrolein was not spiked in the initial calibration verification or LCS due to standard degradation. Professional judgment was used to qualify the common lab contaminant methylene chloride in several samples. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 1.5°C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSK2162-BS | VOCs | Acetone | **54** | NA | 70-130 |
| MSK2162-BS | VOCs | Acrolein | **0** | NA | 70-130 |
| MSK2162-BS | VOCs | 2-Butanone (MEK) | **56** | NA | 70-130 |
| MSK2162-BS | VOCs | Dichlorodifluoromethane | **138** | NA | 70-130 |
| MSK2162-BS | VOCs | Naphthalene | **67** | NA | 70-130 |
| MSK2162-BS | VOCs | 1,2,3-Trichlorobenzene | **63** | NA | 70-130 |
| MSK2162-BS | VOCs | Vinyl acetate | **69** | NA | 70-130 |
| MSH1961-BS | VOCs | Acrolein | **44** | NA | 70-130 |
| MSH1961-BS | VOCs | Carbon tetrachloride | **131** | NA | 70-130 |
| MSH1961-BS | VOCs | Dichlorodifluoromethane | **131** | NA | 70-130 |
| MSH1961-BS | VOCs | 2,2-Dichloropropane | **136** | NA | 70-130 |
| MSM1801-BS | VOCs | Acrolein | **47** | NA | 70-130 |
| MSM1801-BS | VOCs | 2-Hexanone | **131** | NA | 70-130 |

Analytical data that required qualification based on LCS/LCSD data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. Professional judgment was used to not reject acrolein in samples associated with LCS MSK2162-BS due to acrolein not being spiked due to standard degradation. LCS MSH1961-BS was associated with the trip blank. Trip blanks are quality control samples and are not qualified.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| VMP-50-21 | VOCs | Acetone | **UJ** |
| VMP-50-21 | VOCs | 2-Butanone (MEK) | **UJ** |
| VMP-50-21 | VOCs | Naphthalene | **J** |
| VMP-50-21 | VOCs | 1,2,3-Trichlorobenzene | **UJ** |
| VMP-50-21 | VOCs | Vinyl acetate | **UJ** |
| VMP-50-21-Dup | VOCs | Acetone | **UJ** |
| VMP-50-21-Dup | VOCs | 2-Butanone (MEK) | **UJ** |
| VMP-50-21-Dup | VOCs | Naphthalene | **J** |
| VMP-50-21-Dup | VOCs | 1,2,3-Trichlorobenzene | **UJ** |
| VMP-50-21-Dup | VOCs | Vinyl acetate | **UJ** |
| VMP-47-12 | VOCs | Acrolein | **UJ** |
| VMP-47-19 | VOCs | Acrolein | **UJ** |
| VMP-47-29 | VOCs | Acrolein | **UJ** |
| VMP-48-13 | VOCs | Acrolein | **UJ** |
| VMP-48-21 | VOCs | Acrolein | **UJ** |
| VMP-48-27 | VOCs | Acrolein | **UJ** |
| VMP-50-13 | VOCs | Acrolein | **UJ** |
| VMP-50-29 | VOCs | Acrolein | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

No

| Sample ID | Parameter | Surrogate | Recovery | Criteria |
|---|---|---|---|---|
| VMP-50-21 | VOCs by 8011 | Bromofluorobenzene (S) | **216** | 61-167 |

Analytical data reported as non-detect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. No qualification of data was required.

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

No

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

Yes

| Field ID | Field Duplicate ID |
|---|---|
| VMP-50-21 | VMP-50-21-Dup |

*Were field duplicates within evaluation criteria?*

Yes

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

Yes, professional judgment was used to qualify the common laboratory contaminant methylene chloride reported at concentrations less than two times (2X) the reporting limit (RL).

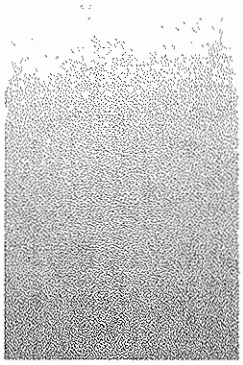
| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| VMP-47-12 | Methylene chloride | - | **U** | Professional Judgment |

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| VMP-47-29 | Methylene chloride | - | **U** | Professional Judgment |
| VMP-48-21 | Methylene chloride | - | **U** | Professional Judgment |
| VMP-48-27 | Methylene chloride | - | **U** | Professional Judgment |

Additionally, field duplicate pair VMP-50-21/VMP-50-21-Dup were associated with the initial calibration verification recovery for acetone that exceeded 50 percent difference (%D). Samples VMP-47-12, VMP-47-19, VMP-47-29, VMP-48-13, VMP-48-21, VMP-48-27, VMP-50-13 and VMP-50-29 were associated with continuing calibration verification recovery for acrolein that exceeded 50 percent difference (%D). Acetone and acrolein were previously qualified due to LCS/LCSD data in Section 5.0 of this review. The trip blank was associated with the continuing calibration verification recovery for 2-chloroethyl vinyl ether that exceeded 50 percent difference (%D). Trip blanks are quality control samples and are not qualified. No additional qualification of data was required.

New England ACCUTEST LABORATORIES

01/21/13





## Technical Report for

**Shell Oil**

URSMOSTL: Roxana Drilling, Roxana, IL

21562735.00015

Accutest Job Number: MC16798

Sampling Dates: 12/10/12 - 12/11/12

Report to:

URS Corporation

elizabeth.kunkel@URS.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **111**

Reviewed on 2/28/2013

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Reza Pand
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) ISO 17025:2005 (L2235)

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# Sample Summary

Shell Oil

Job No: MC16798

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562735.00015

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| MC16798-1 | 12/10/12 | 13:40 | WP | 12/12/12 | SO | Soil | VMP-47-12 |
| MC16798-2 | 12/10/12 | 13:45 | WP | 12/12/12 | SO | Soil | VMP-47-19 |
| MC16798-3 | 12/10/12 | 13:50 | WP | 12/12/12 | SO | Soil | VMP-47-29 |
| MC16798-4 | 12/10/12 | 00:00 | WP | 12/12/12 | AQ | Trip Blank Water | TRIP BLANK |
| MC16798-5 | 12/11/12 | 09:55 | WP | 12/12/12 | SO | Soil | VMP-48-13 |
| MC16798-6 | 12/11/12 | 10:00 | WP | 12/12/12 | SO | Soil | VMP-48-21 |
| MC16798-7 | 12/11/12 | 10:05 | WP | 12/12/12 | SO | Soil | VMP-48-27 |
| MC16798-8 | 12/11/12 | 13:30 | WP | 12/12/12 | SO | Soil | VMP-50-13 |
| MC16798-9 | 12/11/12 | 13:35 | WP | 12/12/12 | SO | Soil | VMP-50-21 |
| MC16798-10 | 12/11/12 | 13:35 | WP | 12/12/12 | SO | Soil | VMP-50-21 DUP |
| MC16798-11 | 12/11/12 | 13:40 | WP | 12/12/12 | SO | Soil | VMP-50-29 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Shell Oil **Job No** MC16798

**Site:** URSMOSTL: Roxana Drilling, Roxana, IL **Report Date** 1/8/2013 4:19:31 PM

10 Sample(s), 1 Trip Blank(s) were collected on between 12/10/2012 and 12/11/2012 and were received at Accutest on 12/12/2012 properly preserved, at 1.5 Deg. C and intact. These Samples received an Accutest job number of MC16798. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Seetion of this report. 1-Chlorohexane was searched in the library search and reported only if detections were found.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSH1961

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC16752-3MS, MC16752-3MSD were used as the QC samples indicated.
- Calibration check standard MSH1961-CC1910 for 2-chloroethyl vinyl ether exceeds 50% difference (response bias high). Associated samples are non-detect for this compound.
- Blank Spike Recovery(s) for 2,2-Dichloropropane, Aerolein, Carbou tetraehloride, Dichlorodifluoromethane are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Ethylbenzene are outside control limits. Outside eontrol limits due to high level in sample relative to spike amount.
- Matrix Spike Recovery(s) for 2,2-Dichloropropane, 2-Chloroethyl vinyl ether, Acrolein, Carbon tetrachloride, Dichlorodifluoromethane are outside eontrol limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2,2-Dichloropropane, 2-Chloroethyl vinyl ether, Acrolein, Carbon tetrachloride are outside control limits. Outside eontrol limits due to possible matrix interference. Refer to Blank Spike.

**Matrix** SO **Batch ID:** MSK2162

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC16697-2MS, MC16697-2MSD were used as the QC samples indicated.
- Initial calibration verification MSK2132-ICV2132 for acetone exceeds 50% Differene e. Acetone is within criteria in continuing calibration check standard MSK2162-CC2132.
- Blank Spike Recovery(s) for 1,2,3-Trichlorobenzene, 2-Butanone (MEK), Acetone, Dichlorodifluoromethane, Naphthalene, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.
- Initial calibration verification stanard MSK2132-ICV2132 for acrolein: Acrolein not present in ICV due to standard degradation.
- MSK2162-BS for Acrolein: Outside control limits due to standard degradation. Refer to Continuing Calibration (file K65735A).
- MC16697-2MS/MSD for Acrolein: Outside control limits due to standard degradation. Refer to Continuing Calibration (file K65735A).

**Matrix** SO **Batch ID:** MSM1801

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16889-1MS, MC16889-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MC16889-1MSD has internal standards outside control limits. Outside control limits due to possible matrix interference. Confirmed by MS/MSD.
- Blank Spike Recovery(s) for 2-Hexanone, Acrolein are outside control limits. Blank Spike meets program technical requirements.

## Volatiles by GCMS By Method SW846 8260B

| Matrix SO | Batch ID: MSM1801 |
|---|---|

- Matrix Spike Recovery(s) for 1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,1-Dichloropropene, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,2-Dichloroethane, 1,2-Dichloropropane, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,3-Dichloropropane, 1,4-Dichlorobenzene, 1,4-Dioxane, 2,2-Dichloropropane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acrolein, Acrylonitrile, Benzene, Bromobenzene, Bromoehloromethane, Bromodiehloromethane, Bromoform, Bromomethane, Carbon disulfide, Carbon tetraehloride, Chlorobenzene, Chloroethane, Chloroform, Chloromethane, eis-1,2-Dichloroethene, eis-1,3-Dichloropropene, Dibromoehloromethane, Dichlorodifluoromethane, Ethyl methaerylate, Ethylbenzene, Hexaehlorobutadiene, Isopropylbenzene, m,p-Xylene, Methyl Tert Butyl Ether, Methylene bromide, Methylene chloride, n-Butylbenzene, n-Propylbenzene, Naphthalene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, p-Isopropyltoluene, see-Butylbenzene, Styrene, tert-Butylbenzene, Tetrachloroethene, Toluene, trans-1,2-Dichloroethene, trans-1,3-Dichloropropene, Trichloroethene, Trichlorofluoromethane, Vinyl Acetate, Vinyl chloride, Xylene (total) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2-Chloroethyl vinyl ether, Aerolein, 1,1,1,2-Tetraehloroethane, 1,1,2,2-Tetraehloroethane, 1,1,2-Trichloroethane, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,2-Dichloropropane, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,3-Dichloropropane, 1,4-Dichlorobenzene, Acetone, Benzene, Bromobenzene, Bromodiehloromethane, Bromoform, Chlorobenzene, eis-1,3-Dichloropropene, Dibromoehloromethane, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, m,p-Xylene, Methyl Tert Butyl Ether, n-Butylbenzene, n-Propylbenzene, Naphthalene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, p-Isopropyltoluene, sec-Butylbenzene, Styrene, tert-Butylbenzene, Tetraehloroethene, Toluene, trans-1,3-Dichloropropene, Trichloroethene, Vinyl Acetate, Xylene (total) are outside control limits. Outside control limits due to possible matrix interferenee. Refer to Blank Spike.
- RPD(s) for MSD for 1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,1-Dichloropropene, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,2-Dichloroethane, 1,2-Dichloropropane, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,3-Dichloropropane, 1,4-Dichlorobenzene, 1,4-Dioxane, 2,2-Dichloropropane, 2-Butanone (MEK), 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acetone, Acrylonitrile, Benzene, Bromobenzene, Bromoehloromethane, Bromodiehloromethane, Bromoform, Bromomethane, Carbon disnlfide, Carbon tetrachloride, Chlorobenzene, Chloroethane, Chloroform, Chloromethane, eis-1,2-Dichloroethene, eis-1,3-Dichloropropene, Dibromoehloromethane, Dichlorodifluoromethane, Ethyl methacrylate, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, m,p-Xylene, Methyl Tert Butyl Ether, Methylene bromide, Methylene chloride, n-Butylbenzene, n-Propylbenzene, Naphthalene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, p-Isopropyltoluene, sec-Butylbenzene, Styrene, tert-Butylbenzene, Tetraehloroethene, Toluene, trans-1,2-Dichloroethene, trans-1,3-Dichloropropene, Trichloroethene, Trichlorofluoromethane, Vinyl Acetate, Vinyl chloride, Xylene (total) are outside control limits for sample MC16889-1MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- Continuing calibration eheck standard MSM1801-CC1800 for acrolein exceeded 50% Differenee. Acrolein is considered a difficult method analyte.

## Volatiles by GC By Method SW846 8011

| Matrix AQ | Batch ID: OP31406 |
|---|---|

- All samples were extraeted within the recommended method holding time.
- All samples were analyzed within the reeommended method holding time.
- Sample(s) MC16600-6MS, MC16600-6MSD were used as the QC samples indieated.
- All method blanks for this batch meet method speeifie eriteria.

| Matrix SO | Batch ID: OP31434 |
|---|---|

- All samples were extraeted within the reeommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16644-1MS, MC16644-1MSD were nsed as the QC samples indicated.
- All method blanks for this batch meet method specifie eriteria.
- MC16798-9 for Bromofluorobenzene (S): Outside control limits due to possible matrix interference.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN41308 |
|---|---|

- Sample(s) MC16798-1DUP were used as the QC samples for Solids, Percent.

| Matrix SO | Batch ID: GN41319 |
|---|---|

- Sample(s) MC16889-12DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC16798).

# Summary of Hits



Job Number: MC16798
Account: Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Collected: 12/10/12 thru 12/11/12

| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| MC16798-1 | VMP-47-12 | | | | | |
| Benzene | | 0.0017 | 0.00059 | 0.00035 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0066 | 0.0023 | 0.00028 | mg/kg | SW846 8260B |
| Methylene chloride | | 0.0015 J | 0.0023 | 0.0014 | mg/kg | SW846 8260B |
| Toluene | | 0.0064 | 0.0059 | 0.0010 | mg/kg | SW846 8260B |
| m,p-Xylene | | 0.0013 J | 0.0023 | 0.00092 | mg/kg | SW846 8260B |
| o-Xylene | | 0.00055 J | 0.0023 | 0.00028 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0018 J | 0.0023 | 0.00028 | mg/kg | SW846 8260B |
| MC16798-2 | VMP-47-19 | | | | | |
| Benzene | | 0.0017 | 0.00057 | 0.00033 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0066 | 0.0023 | 0.00027 | mg/kg | SW846 8260B |
| Toluene | | 0.0064 | 0.0057 | 0.00096 | mg/kg | SW846 8260B |
| m,p-Xylene | | 0.0013 J | 0.0023 | 0.00090 | mg/kg | SW846 8260B |
| o-Xylene | | 0.00053 J | 0.0023 | 0.00027 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0018 J | 0.0023 | 0.00027 | mg/kg | SW846 8260B |
| MC16798-3 | VMP-47-29 | | | | | |
| Benzene | | 0.00080 | 0.00056 | 0.00033 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0016 J | 0.0022 | 0.00027 | mg/kg | SW846 8260B |
| Methylene chloride | | 0.0014 J | 0.0022 | 0.0013 | mg/kg | SW846 8260B |
| Toluene | | 0.0022 J | 0.0056 | 0.00095 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.00063 J | 0.0022 | 0.00027 | mg/kg | SW846 8260B |
| MC16798-4 | TRIP BLANK | | | | | |
| No hits reported in this sample. | | | | | | |
| MC16798-5 | VMP-48-13 | | | | | |
| Benzene | | 0.0011 | 0.00057 | 0.00034 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0030 | 0.0023 | 0.00028 | mg/kg | SW846 8260B |
| Toluene | | 0.0034 J | 0.0057 | 0.00097 | mg/kg | SW846 8260B |
| o-Xylene | | 0.00036 J | 0.0023 | 0.00027 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0010 J | 0.0023 | 0.00027 | mg/kg | SW846 8260B |
| MC16798-6 | VMP-48-21 | | | | | |
| Benzene | | 0.0011 | 0.00058 | 0.00034 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0029 | 0.0023 | 0.00028 | mg/kg | SW846 8260B |
| Methylene chloride | | 0.0014 J | 0.0023 | 0.0013 | mg/kg | SW846 8260B |
| Toluene | | 0.0034 J | 0.0058 | 0.00098 | mg/kg | SW846 8260B |

# Summary of Hits

Job Number: MC16798
Account: Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Collected: 12/10/12 thru 12/11/12

| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| o-Xylene | | 0.00043 J | 0.0023 | 0.00028 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0013 J | 0.0023 | 0.00028 | mg/kg | SW846 8260B |
| **MC16798-7** | **VMP-48-27** | | | | | |
| Benzene | | 0.0014 | 0.00071 | 0.00042 | mg/kg | SW846 8260B |
| Carbon disulfide | | 0.0017 J | 0.0071 | 0.00023 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0048 | 0.0029 | 0.00034 | mg/kg | SW846 8260B |
| Methylene chloride | | 0.0017 J | 0.0029 | 0.0017 | mg/kg | SW846 8260B |
| Toluene | | 0.0051 J | 0.0071 | 0.0012 | mg/kg | SW846 8260B |
| m,p-Xylene | | 0.0013 J | 0.0029 | 0.0011 | mg/kg | SW846 8260B |
| o-Xylene | | 0.00054 J | 0.0029 | 0.00034 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0018 J | 0.0029 | 0.00034 | mg/kg | SW846 8260B |
| **MC16798-8** | **VMP-50-13** | | | | | |
| Benzene | | 0.0017 | 0.00091 | 0.00053 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0054 | 0.0036 | 0.00044 | mg/kg | SW846 8260B |
| Toluene | | 0.0056 J | 0.0091 | 0.0015 | mg/kg | SW846 8260B |
| Vinyl chloride | | 0.0017 J | 0.0036 | 0.00049 | mg/kg | SW846 8260B |
| m,p-Xylene | | 0.0015 J | 0.0036 | 0.0014 | mg/kg | SW846 8260B |
| o-Xylene | | 0.00054 J | 0.0036 | 0.00043 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0020 J | 0.0036 | 0.00043 | mg/kg | SW846 8260B |
| **MC16798-9** | **VMP-50-21** | | | | | |
| n-Butylbenzene | | 15.6 | 3.0 | 0.11 | mg/kg | SW846 8260B |
| sec-Butylbenzene | | 3.99 | 3.0 | 0.14 | mg/kg | SW846 8260B |
| tert-Butylbenzene | | 2.43 J | 3.0 | 0.53 | mg/kg | SW846 8260B |
| Ethylbenzene | | 45.8 | 1.2 | 0.15 | mg/kg | SW846 8260B |
| Isopropylbenzene | | 9.40 | 3.0 | 0.14 | mg/kg | SW846 8260B |
| p-Isopropyltoluene | | 3.31 | 3.0 | 0.11 | mg/kg | SW846 8260B |
| Naphthalene | | 15.4 | 3.0 | 0.75 | mg/kg | SW846 8260B |
| n-Propylbenzene | | 32.0 | 3.0 | 0.61 | mg/kg | SW846 8260B |
| Toluene | | 0.937 J | 3.0 | 0.51 | mg/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | | 146 | 3.0 | 0.13 | mg/kg | SW846 8260B |
| 1,3,5-Trimethylbenzene | | 41.6 | 3.0 | 0.13 | mg/kg | SW846 8260B |
| m,p-Xylene | | 117 | 1.2 | 0.47 | mg/kg | SW846 8260B |
| o-Xylene | | 46.6 | 1.2 | 0.14 | mg/kg | SW846 8260B |
| Xylene (total) | | 164 | 1.2 | 0.14 | mg/kg | SW846 8260B |
| **MC16798-10** | **VMP-50-21 DUP** | | | | | |
| n-Butylbenzene | | 14.0 | 2.7 | 0.10 | mg/kg | SW846 8260B |
| sec-Butylbenzene | | 3.69 | 2.7 | 0.12 | mg/kg | SW846 8260B |

# Summary of Hits

Job Number: MC16798
Account: Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Collected: 12/10/12 thru 12/11/12

| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| tert-Butylbenzene | | 2.19 J | 2.7 | 0.48 | mg/kg | SW846 8260B |
| Ethylbenzene | | 50.8 | 1.1 | 0.13 | mg/kg | SW846 8260B |
| Isopropylbenzene | | 9.63 | 2.7 | 0.12 | mg/kg | SW846 8260B |
| p-Isopropyltoluene | | 2.94 | 2.7 | 0.096 | mg/kg | SW846 8260B |
| Naphthalene | | 15.0 | 2.7 | 0.68 | mg/kg | SW846 8260B |
| n-Propylbenzene | | 31.0 | 2.7 | 0.55 | mg/kg | SW846 8260B |
| Toluene | | 1.29 J | 2.7 | 0.46 | mg/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | | 134 | 2.7 | 0.12 | mg/kg | SW846 8260B |
| 1,3,5-Trimethylbenzene | | 38.6 | 2.7 | 0.12 | mg/kg | SW846 8260B |
| m,p-Xylene | | 127 | 1.1 | 0.43 | mg/kg | SW846 8260B |
| o-Xylene | | 49.2 | 1.1 | 0.13 | mg/kg | SW846 8260B |
| Xylene (total) | | 177 | 1.1 | 0.13 | mg/kg | SW846 8260B |
| MC16798-11 | VMP-50-29 | | | | | |
| Benzene | | 0.0037 | 0.00048 | 0.00028 | mg/kg | SW846 8260B |
| n-Butylbenzene | | 0.0206 | 0.0048 | 0.00018 | mg/kg | SW846 8260B |
| sec-Butylbenzene | | 0.0071 | 0.0048 | 0.00022 | mg/kg | SW846 8260B |
| tert-Butylbenzene | | 0.0032 J | 0.0048 | 0.00084 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0427 | 0.0019 | 0.00023 | mg/kg | SW846 8260B |
| Isopropylbenzene | | 0.0102 | 0.0048 | 0.00022 | mg/kg | SW846 8260B |
| p-Isopropyltoluene | | 0.0043 J | 0.0048 | 0.00017 | mg/kg | SW846 8260B |
| Naphthalene | | 0.0501 | 0.0048 | 0.0012 | mg/kg | SW846 8260B |
| n-Propylbenzene | | 0.0396 | 0.0048 | 0.00097 | mg/kg | SW846 8260B |
| Toluene | | 0.0330 | 0.0048 | 0.00081 | mg/kg | SW846 8260B |
| 1,2,4-Trimethylbenzene | | 0.246 | 0.0048 | 0.00021 | mg/kg | SW846 8260B |
| 1,3,5-Trimethylbenzene | | 0.0676 | 0.0048 | 0.00020 | mg/kg | SW846 8260B |
| Vinyl chloride | | 0.00074 J | 0.0019 | 0.00026 | mg/kg | SW846 8260B |
| m,p-Xylene | | 0.111 | 0.0019 | 0.00075 | mg/kg | SW846 8260B |
| o-Xylene | | 0.0808 | 0.0019 | 0.00023 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.192 | 0.0019 | 0.00023 | mg/kg | SW846 8260B |

New England ACCUTEST LABORATORIES



## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-47-12 | | |
| Lab Sample ID: | MC16798-1 | Date Sampled: | 12/10/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 93.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53046.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.58 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0059 | 0.0015 | mg/kg | |
| 107-02-8 | Acrolein | ND | 0.029 | 0.012 | mg/kg | |
| 107-13-1 | Acrylonitrile | ND | 0.029 | 0.0015 | mg/kg | |
| 71-43-2 | Benzene | 0.0017 | 0.00059 | 0.00035 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0059 | 0.00026 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0059 | 0.00044 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0023 | 0.00025 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0023 | 0.0023 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0023 | 0.00061 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0059 | 0.0015 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0059 | 0.00022 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0059 | 0.00027 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0059 | 0.0010 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0059 | 0.00019 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0023 | 0.00085 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0023 | 0.00032 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0059 | 0.0015 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0059 | 0.0023 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0023 | 0.00060 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0059 | 0.00054 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0059 | 0.0013 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0059 | 0.00027 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0023 | 0.00035 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0023 | 0.00025 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0023 | 0.00026 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0023 | 0.00025 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0023 | 0.0013 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0023 | 0.00032 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0023 | 0.00034 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0023 | 0.00043 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0023 | 0.00035 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0023 | 0.00034 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-47-12 | | |
| Lab Sample ID: | MC16798-1 | Date Sampled: | 12/10/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 93.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0023 | 0.00044 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0059 | 0.00027 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0059 | 0.0010 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0059 | 0.00031 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0023 | 0.00020 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0023 | 0.00058 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.029 | 0.029 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0059 | 0.00080 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0066 | 0.0023 | 0.00028 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0059 | 0.00055 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0059 | 0.00059 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0059 | 0.00027 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0059 | 0.00021 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0023 | 0.00034 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0059 | 0.00059 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0059 | 0.00058 | mg/kg | |
| 75-09-2 | Methylene chloride | 0.0015 | 0.0023 | 0.0014 | mg/kg | J |
| 91-20-3 | Naphthaleue | ND | 0.0059 | 0.0015 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0059 | 0.0012 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0059 | 0.00027 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0059 | 0.0012 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0023 | 0.00050 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0023 | 0.00027 | mg/kg | |
| 108-88-3 | Toluene | 0.0064 | 0.0059 | 0.0010 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0059 | 0.00028 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0059 | 0.00027 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0023 | 0.00037 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0023 | 0.00086 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0023 | 0.00025 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0023 | 0.00036 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0059 | 0.00034 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0059 | 0.00026 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0059 | 0.00025 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0059 | 0.00066 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0023 | 0.00032 | mg/kg | |
| | m,p-Xylene | 0.0013 | 0.0023 | 0.00092 | mg/kg | J |
| 95-47-6 | o-Xylene | 0.00055 | 0.0023 | 0.00028 | mg/kg | J |
| 1330-20-7 | Xylene (total) | 0.0018 | 0.0023 | 0.00028 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-47-12 | | |
| Lab Sample ID: | MC16798-1 | Date Sampled: | 12/10/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 93.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 84% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 87% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 83% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-47-12 | | |
| Lab Sample ID: | MC16798-1 | Date Sampled: | 12/10/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8011 SW846 3546 | Percent Solids: | 93.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK20063.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.6 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.0010 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 142% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 131% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-47-19 | | |
| Lab Sample ID: | MC16798-2 | Date Sampled: | 12/10/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 89.2 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53063.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.93 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0057 | 0.0014 | mg/kg | |
| 107-02-8 | Acrolein | ND | 0.028 | 0.011 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 0.028 | 0.0014 | mg/kg | |
| 71-43-2 | Benzene | 0.0017 | 0.00057 | 0.00033 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0057 | 0.00025 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0057 | 0.00042 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0023 | 0.00024 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0023 | 0.0023 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0023 | 0.00059 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0057 | 0.0014 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0057 | 0.00021 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0057 | 0.00026 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0057 | 0.0010 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0057 | 0.00019 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0023 | 0.00083 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0023 | 0.00031 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0057 | 0.0014 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0057 | 0.0023 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0023 | 0.00059 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0057 | 0.00053 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0057 | 0.0013 | mg/kg | |
| 106-43-4 | p-Chlorotolnene | ND | 0.0057 | 0.00026 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0023 | 0.00034 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0023 | 0.00025 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0023 | 0.00026 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0023 | 0.00024 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0023 | 0.0013 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0023 | 0.00031 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0023 | 0.00033 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0023 | 0.00042 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0023 | 0.00034 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0023 | 0.00033 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presnmptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-47-19 | | |
| Lab Sample ID: | MC16798-2 | Date Sampled: | 12/10/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 89.2 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0023 | 0.00042 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0057 | 0.00026 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0057 | 0.00099 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0057 | 0.00030 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0023 | 0.00019 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0023 | 0.00056 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.028 | 0.028 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0057 | 0.00077 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0066 | 0.0023 | 0.00027 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0057 | 0.00053 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0057 | 0.00057 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0057 | 0.00026 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0057 | 0.00020 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0023 | 0.00033 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0057 | 0.00057 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0057 | 0.00056 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0023 | 0.0013 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.0057 | 0.0014 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0057 | 0.0012 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0057 | 0.00027 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0057 | 0.0011 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0023 | 0.00048 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0023 | 0.00026 | mg/kg | |
| 108-88-3 | Toluene | 0.0064 | 0.0057 | 0.00096 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0057 | 0.00027 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0057 | 0.00026 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0023 | 0.00036 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0023 | 0.00084 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0023 | 0.00024 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0023 | 0.00035 | mg/kg | |
| 96-18-4 | 1,2,3-Trichlnropropane | ND | 0.0057 | 0.00033 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylhenzene | ND | 0.0057 | 0.00025 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0057 | 0.00024 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0057 | 0.00064 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0023 | 0.00031 | mg/kg | |
| | m,p-Xylene | 0.0013 | 0.0023 | 0.00090 | mg/kg | J |
| 95-47-6 | o-Xylene | 0.00053 | 0.0023 | 0.00027 | mg/kg | J |
| 1330-20-7 | Xylene (total) | 0.0018 | 0.0023 | 0.00027 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte fonnd in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-47-19 | | |
| Lab Sample ID: | MC16798-2 | Date Sampled: | 12/10/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 89.2 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 87% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 83% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blauk
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-47-19 | | |
| Lab Sample ID: | MC16798-2 | Date Sampled: | 12/10/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8011 SW846 3546 | Percent Solids: | 89.2 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK20064.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.2 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0028 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0028 | 0.0011 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 140% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 131% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-47-29 | | |
| Lab Sample ID: | MC16798-3 | Date Sampled: | 12/10/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 94.9 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53048.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.73 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0056 | 0.0014 | mg/kg | |
| 107-02-8 | Acrolein | ND | 0.028 | 0.011 | mg/kg | |
| 107-13-1 | Acrylonitrile | ND | 0.028 | 0.0014 | mg/kg | |
| 71-43-2 | Benzene | 0.00080 | 0.00056 | 0.00033 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0056 | 0.00025 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0056 | 0.00042 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0022 | 0.00024 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0022 | 0.0022 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0022 | 0.00058 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0056 | 0.0014 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0056 | 0.00021 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0056 | 0.00026 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0056 | 0.00098 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0056 | 0.00018 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0022 | 0.00081 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0022 | 0.00031 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0056 | 0.0014 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0056 | 0.0022 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0022 | 0.00057 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0056 | 0.00052 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0056 | 0.0012 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0056 | 0.00025 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0022 | 0.00033 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0022 | 0.00024 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0022 | 0.00025 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0022 | 0.00023 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0022 | 0.0013 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0022 | 0.00030 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0022 | 0.00032 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0022 | 0.00041 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0022 | 0.00034 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0022 | 0.00032 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-47-29 | | |
| Lab Sample ID: | MC16798-3 | Date Sampled: | 12/10/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 94.9 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0022 | 0.00041 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0056 | 0.00026 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0056 | 0.00097 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0056 | 0.00029 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0022 | 0.00019 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0022 | 0.00055 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.028 | 0.028 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0056 | 0.00076 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0016 | 0.0022 | 0.00027 | mg/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0056 | 0.00052 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0056 | 0.00056 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0056 | 0.00025 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0056 | 0.00020 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0022 | 0.00032 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0056 | 0.00056 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0056 | 0.00055 | mg/kg | |
| 75-09-2 | Methylene chloride | ~~0.0014~~ | 0.0022 | 0.0013 | mg/kg | J |
| 91-20-3 | Naphthalene | ND | 0.0056 | 0.0014 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0056 | 0.0011 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0056 | 0.00026 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0056 | 0.0011 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0022 | 0.00047 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0022 | 0.00025 | mg/kg | |
| 108-88-3 | Toluene | 0.0022 | 0.0056 | 0.00095 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0056 | 0.00026 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0056 | 0.00026 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0022 | 0.00035 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0022 | 0.00082 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0022 | 0.00024 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0022 | 0.00034 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0056 | 0.00033 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0056 | 0.00025 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0056 | 0.00024 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0056 | 0.00062 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0022 | 0.00030 | mg/kg | |
| | m,p-Xylene | ND | 0.0022 | 0.00088 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.0022 | 0.00027 | mg/kg | |
| 1330-20-7 | Xylene (total) | 0.00063 | 0.0022 | 0.00027 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-47-29 | | |
| Lab Sample ID: | MC16798-3 | Date Sampled: | 12/10/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 94.9 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 83% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-47-29 | | |
| Lab Sample ID: | MC16798-3 | Date Sampled: | 12/10/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8011 SW846 3546 | Percent Solids: | 94.9 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK20066.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.6 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.00099 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromoflnorobenzene (S) | 143% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 135% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated valne
B = Indicates analyte found in associated method hlank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16798-4 | Date Sampled: | 12/10/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | H59392.D | 1 | 12/20/12 | JP | n/a | n/a | MSH1961 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 3.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.2 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.24 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.62 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.3 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.58 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.78 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.4 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.61 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.55 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.64 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.61 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.87 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.47 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.50 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 1.3 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.50 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.73 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.65 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.48 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.53 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.93 | ug/l | |
| 541-73-1 | 1,3-Dichlorobeuzene | ND | 1.0 | 0.45 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.64 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.7 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.62 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.41 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.95 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16798-4 | Date Sampled: | 12/10/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.72 | ng/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.64 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 1.6 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.91 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.45 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.20 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 15 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.81 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.51 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 2.1 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.50 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.57 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.41 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 2.9 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.1 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.83 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.58 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.45 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.57 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.60 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.42 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.51 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.85 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.50 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.78 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.29 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.85 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.35 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.47 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.3 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.63 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.73 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.58 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.58 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16798-4 | Date Sampled: | 12/10/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 106% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16798-4 | Date Sampled: | 12/10/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/12/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK19948.D | 1 | 12/14/12 | AP | 12/13/12 | OP31406 | GBK716 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 35.8 ml | 2.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.015 | 0.013 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.015 | 0.010 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 102% | | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 116% | | 36-173% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-48-13 | | |
| Lab Sample ID: | MC16798-5 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 92.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53049.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.73 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0057 | 0.0014 | mg/kg | |
| 107-02-8 | Acrolein | ND | 0.029 | 0.011 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 0.029 | 0.0014 | mg/kg | |
| 71-43-2 | Benzene | 0.0011 | 0.00057 | 0.00034 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0057 | 0.00025 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0057 | 0.00043 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0023 | 0.00024 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0023 | 0.0023 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0023 | 0.00059 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0057 | 0.0014 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0057 | 0.00021 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0057 | 0.00026 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0057 | 0.0010 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0057 | 0.00019 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0023 | 0.00083 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0023 | 0.00031 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0057 | 0.0014 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0057 | 0.0023 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0023 | 0.00059 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0057 | 0.00053 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0057 | 0.0013 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0057 | 0.00026 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0023 | 0.00034 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0023 | 0.00025 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0023 | 0.00026 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0023 | 0.00024 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0023 | 0.0013 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0023 | 0.00031 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0023 | 0.00033 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0023 | 0.00042 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0023 | 0.00034 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0023 | 0.00033 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-48-13 | | |
| Lab Sample ID: | MC16798-5 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 92.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0023 | 0.00043 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0057 | 0.00026 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0057 | 0.00099 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0057 | 0.00030 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0023 | 0.00020 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0023 | 0.00057 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.029 | 0.029 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0057 | 0.00078 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0030 | 0.0023 | 0.00028 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0057 | 0.00053 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0057 | 0.00057 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0057 | 0.00026 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0057 | 0.00020 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0023 | 0.00033 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0057 | 0.00057 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0057 | 0.00056 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0023 | 0.0013 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.0057 | 0.0014 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0057 | 0.0012 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0057 | 0.00027 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0057 | 0.0011 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0023 | 0.00049 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0023 | 0.00026 | mg/kg | |
| 108-88-3 | Toluene | 0.0034 | 0.0057 | 0.00097 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0057 | 0.00027 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0057 | 0.00026 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0023 | 0.00036 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0023 | 0.00084 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0023 | 0.00024 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0023 | 0.00035 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0057 | 0.00033 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0057 | 0.00026 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0057 | 0.00024 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0057 | 0.00064 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0023 | 0.00031 | mg/kg | |
| | m,p-Xylene | ND | 0.0023 | 0.00090 | mg/kg | |
| 95-47-6 | o-Xylene | 0.00036 | 0.0023 | 0.00027 | mg/kg | J |
| 1330-20-7 | Xylene (total) | 0.0010 | 0.0023 | 0.00027 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-48-13 | | |
| Lab Sample ID: | MC16798-5 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 92.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 83% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-48-13 | | |
| Lab Sample ID: | MC16798-5 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8011 SW846 3546 | Percent Solids: | 92.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK20067.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 31.0 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.0010 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 139% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 138% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-48-21 | | |
| Lab Sample ID: | MC16798-6 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 94.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53055.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.59 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0058 | 0.0015 | mg/kg | |
| 107-02-8 | Acrolein | ND | 0.029 | 0.012 | mg/kg | |
| 107-13-1 | Acrylonitrile | ND | 0.029 | 0.0014 | mg/kg | |
| 71-43-2 | Benzene | 0.0011 | 0.00058 | 0.00034 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0058 | 0.00026 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0058 | 0.00043 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0023 | 0.00024 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0023 | 0.0023 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0023 | 0.00060 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0058 | 0.0014 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0058 | 0.00021 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0058 | 0.00026 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0058 | 0.0010 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0058 | 0.00019 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0023 | 0.00084 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0023 | 0.00032 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0058 | 0.0014 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0058 | 0.0023 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0023 | 0.00059 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0058 | 0.00053 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0058 | 0.0013 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0058 | 0.00026 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0023 | 0.00034 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0023 | 0.00025 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0023 | 0.00026 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0023 | 0.00024 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0023 | 0.0013 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0023 | 0.00031 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0023 | 0.00033 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0023 | 0.00042 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0023 | 0.00035 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0023 | 0.00033 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-48-21 | | |
| Lab Sample ID: | MC16798-6 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 94.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0023 | 0.00043 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0058 | 0.00027 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0058 | 0.0010 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0058 | 0.00030 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0023 | 0.00020 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0023 | 0.00057 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.029 | 0.029 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0058 | 0.00078 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0029 | 0.0023 | 0.00028 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0058 | 0.00053 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0058 | 0.00058 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0058 | 0.00026 | mg/kg | |
| 99-87-6 | p-Isopropyltolnene | ND | 0.0058 | 0.00020 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0023 | 0.00033 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0058 | 0.00058 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0058 | 0.00057 | mg/kg | |
| 75-09-2 | Methylene chloride | 0.0014 | 0.0023 | 0.0013 | mg/kg | J |
| 91-20-3 | Naphthalene | ND | 0.0058 | 0.0014 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0058 | 0.0012 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0058 | 0.00027 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0058 | 0.0012 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0023 | 0.00049 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0023 | 0.00026 | mg/kg | |
| 108-88-3 | Toluene | 0.0034 | 0.0058 | 0.00098 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorohenzene | ND | 0.0058 | 0.00027 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0058 | 0.00026 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0023 | 0.00036 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0023 | 0.00084 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0023 | 0.00024 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0023 | 0.00035 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0058 | 0.00034 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0058 | 0.00026 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0058 | 0.00025 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0058 | 0.00064 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0023 | 0.00031 | mg/kg | |
| | m,p-Xylene | ND | 0.0023 | 0.00091 | mg/kg | |
| 95-47-6 | o-Xylene | 0.00043 | 0.0023 | 0.00028 | mg/kg | J |
| 1330-20-7 | Xylene (total) | 0.0013 | 0.0023 | 0.00028 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-48-21 | | |
| Lab Sample ID: | MC16798-6 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 94.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 84% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP-48-21 | | |
| **Lab Sample ID:** | MC16798-6 | **Date Sampled:** | 12/11/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/12/12 |
| **Method:** | SW846 8011 SW846 3546 | **Percent Solids:** | 94.7 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK20068.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.5 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.0010 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 137% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 135% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-48-27 | | |
| Lab Sample ID: | MC16798-7 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 94.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53056.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 3.70 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0071 | 0.0018 | mg/kg | |
| 107-02-8 | Acrolein | ND | 0.036 | 0.014 | mg/kg | ω J |
| 107-13-1 | Acrylonitrile | ND | 0.036 | 0.0018 | mg/kg | |
| 71-43-2 | Benzene | 0.0014 | 0.00071 | 0.00042 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0071 | 0.00032 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0071 | 0.00053 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0029 | 0.00030 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0029 | 0.0029 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0029 | 0.00074 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0071 | 0.0018 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0071 | 0.00026 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0071 | 0.00033 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0071 | 0.0013 | mg/kg | |
| 75-15-0 | Carbon disulfide | 0.0017 | 0.0071 | 0.00023 | mg/kg | J |
| 56-23-5 | Carbon tetrachloride | ND | 0.0029 | 0.0010 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0029 | 0.00039 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0071 | 0.0018 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0071 | 0.0029 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0029 | 0.00073 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0071 | 0.00066 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0071 | 0.0016 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0071 | 0.00032 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0029 | 0.00042 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0029 | 0.00031 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0029 | 0.00032 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0029 | 0.00030 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0029 | 0.0016 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0029 | 0.00039 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0029 | 0.00041 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0029 | 0.00052 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0029 | 0.00043 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0029 | 0.00041 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-48-27 | | |
| Lab Sample ID: | MC16798-7 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 94.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0029 | 0.00053 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropaue | ND | 0.0071 | 0.00033 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0071 | 0.0012 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0071 | 0.00037 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0029 | 0.00024 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0029 | 0.00071 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.036 | 0.036 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0071 | 0.00097 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0048 | 0.0029 | 0.00034 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0071 | 0.00066 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0071 | 0.00071 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0071 | 0.00033 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0071 | 0.00025 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0029 | 0.00041 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0071 | 0.00071 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0071 | 0.00070 | mg/kg | |
| 75-09-2 | Methylene chloride | ~~0.0017~~ | 0.0029 | 0.0017 | mg/kg | J |
| 91-20-3 | Naphthalene | ND | 0.0071 | 0.0018 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0071 | 0.0014 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0071 | 0.00033 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0071 | 0.0014 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0029 | 0.00061 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0029 | 0.00033 | mg/kg | |
| 108-88-3 | Tolnene | 0.0051 | 0.0071 | 0.0012 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0071 | 0.00034 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0071 | 0.00033 | mg/kg | |
| 71-55-6 | I,1,1-Trichloroethane | ND | 0.0029 | 0.00045 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0029 | 0.0010 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0029 | 0.00030 | mg/kg | |
| 75-69-4 | Trichloroflnoromethane | ND | 0.0029 | 0.00043 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0071 | 0.00042 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0071 | 0.00032 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0071 | 0.00030 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0071 | 0.00080 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0029 | 0.00039 | mg/kg | |
| | m,p-Xylene | 0.0013 | 0.0029 | 0.0011 | mg/kg | J |
| 95-47-6 | o-Xylene | 0.00054 | 0.0029 | 0.00034 | mg/kg | J |
| 1330-20-7 | Xylene (total) | 0.0018 | 0.0029 | 0.00034 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-48-27 | | |
| Lab Sample ID: | MC16798-7 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 94.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 80% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 83% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-48-27 | | |
| Lab Sample ID: | MC16798-7 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8011 SW846 3546 | Percent Solids: | 94.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK20069.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.8 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0011 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.00099 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 149% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 145% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-50-13 | | |
| Lab Sample ID: | MC16798-8 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 86.2 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53057.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 3.20 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0091 | 0.0023 | mg/kg | |
| 107-02-8 | Acrolein | ND | 0.045 | 0.018 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 0.045 | 0.0023 | mg/kg | |
| 71-43-2 | Benzene | 0.0017 | 0.00091 | 0.00053 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0091 | 0.00040 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0091 | 0.00068 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0036 | 0.00038 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0036 | 0.0036 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0036 | 0.00094 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0091 | 0.0023 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0091 | 0.00033 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0091 | 0.00042 | mg/kg | |
| 98-06-6 | tert-Bntylbenzene | ND | 0.0091 | 0.0016 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0091 | 0.00030 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0036 | 0.0013 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0036 | 0.00050 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0091 | 0.0023 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0091 | 0.0036 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0036 | 0.00093 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0091 | 0.00084 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0091 | 0.0020 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0091 | 0.00041 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0036 | 0.00054 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0036 | 0.00039 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0036 | 0.00041 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0036 | 0.00038 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0036 | 0.0021 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0036 | 0.00049 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0036 | 0.00052 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0036 | 0.00067 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0036 | 0.00055 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0036 | 0.00052 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-50-13 | | |
| Lab Sample ID: | MC16798-8 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 86.2 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0036 | 0.00067 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0091 | 0.00042 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0091 | 0.0016 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0091 | 0.00048 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0036 | 0.00031 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0036 | 0.00090 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.045 | 0.045 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0091 | 0.0012 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0054 | 0.0036 | 0.00044 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0091 | 0.00084 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0091 | 0.00091 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0091 | 0.00041 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0091 | 0.00032 | mg/kg | |
| 1634-04-4 | Methyl Tert Botyl Ether | ND | 0.0036 | 0.00052 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0091 | 0.00091 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0091 | 0.00089 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0036 | 0.0021 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.0091 | 0.0023 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0091 | 0.0018 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0091 | 0.00042 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0091 | 0.0018 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0036 | 0.00077 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0036 | 0.00041 | mg/kg | |
| 108-88-3 | Toluene | 0.0056 | 0.0091 | 0.0015 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0091 | 0.00043 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0091 | 0.00042 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0036 | 0.00057 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0036 | 0.0013 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0036 | 0.00038 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0036 | 0.00055 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0091 | 0.00053 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0091 | 0.00041 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0091 | 0.00039 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0091 | 0.0010 | mg/kg | |
| 75-01-4 | Vinyl chloride | 0.0017 | 0.0036 | 0.00049 | mg/kg | J |
| | m,p-Xylene | 0.0015 | 0.0036 | 0.0014 | mg/kg | J |
| 95-47-6 | o-Xylene | 0.00054 | 0.0036 | 0.00043 | mg/kg | J |
| 1330-20-7 | Xylene (total) | 0.0020 | 0.0036 | 0.00043 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-50-13 | | |
| Lab Sample ID: | MC16798-8 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 86.2 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 83% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 83% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte fonnd in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-50-13 | | |
| Lab Sample ID: | MC16798-8 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8011 SW846 3546 | Percent Solids: | 86.2 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK20070.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.2 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0029 | 0.0013 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0029 | 0.0011 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 148% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 146% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-50-21 | | |
| Lab Sample ID: | MC16798-9 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 84.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K65759.D | 1 | 12/17/12 | GK | n/a | n/a | MSK2162 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.34 g | 10.0 ml | 20.0 ul |
| Run #2 | | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 3.0 | 0.76 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 15 | 6.0 | mg/kg | |
| 107-13-1 | Acrylonitrile | ND | 15 | 0.75 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.30 | 0.18 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 3.0 | 0.13 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 3.0 | 0.22 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 1.2 | 0.13 | mg/kg | |
| 75-25-2 | Bromoform | ND | 1.2 | 1.2 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 1.2 | 0.31 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 3.0 | 0.75 | mg/kg | UJ |
| 104-51-8 | n-Butylbenzene | 15.6 | 3.0 | 0.11 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | 3.99 | 3.0 | 0.14 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | 2.43 | 3.0 | 0.53 | mg/kg | J |
| 75-15-0 | Carbon disulfide | ND | 3.0 | 0.099 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 1.2 | 0.44 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 1.2 | 0.17 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 3.0 | 0.76 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 3.0 | 1.2 | mg/kg | |
| 67-66-3 | Chloroform | ND | 1.2 | 0.31 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 3.0 | 0.28 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 3.0 | 0.66 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 3.0 | 0.14 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 1.2 | 0.18 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.2 | 0.13 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.2 | 0.14 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.2 | 0.13 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 1.2 | 0.68 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.2 | 0.16 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.2 | 0.17 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.2 | 0.22 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.2 | 0.18 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.2 | 0.17 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-50-21 | | |
| Lab Sample ID: | MC16798-9 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 84.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 1.2 | 0.22 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 3.0 | 0.14 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 3.0 | 0.52 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 3.0 | 0.16 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1.2 | 0.10 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1.2 | 0.30 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 15 | 15 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 3.0 | 0.41 | mg/kg | |
| 100-41-4 | Ethylbenzene | 45.8 | 1.2 | 0.15 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 3.0 | 0.28 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 3.0 | 0.30 | mg/kg | |
| 98-82-8 | Isopropylbenzene | 9.40 | 3.0 | 0.14 | mg/kg | |
| 99-87-6 | p-Isopropyltolnene | 3.31 | 3.0 | 0.11 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.2 | 0.17 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 3.0 | 0.30 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 3.0 | 0.30 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 1.2 | 0.70 | mg/kg | |
| 91-20-3 | Naphthalene | 15.4 | 3.0 | 0.75 | mg/kg | J |
| 103-65-1 | n-Propylbenzene | 32.0 | 3.0 | 0.61 | mg/kg | |
| 100-42-5 | Styrene | ND | 3.0 | 0.14 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 3.0 | 0.60 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.2 | 0.26 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 1.2 | 0.14 | mg/kg | |
| 108-88-3 | Toluene | 0.937 | 3.0 | 0.51 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 3.0 | 0.14 | mg/kg | UJ |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 3.0 | 0.14 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.2 | 0.19 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.2 | 0.44 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 1.2 | 0.13 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.2 | 0.18 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 3.0 | 0.18 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 146 | 3.0 | 0.13 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 41.6 | 3.0 | 0.13 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 3.0 | 0.34 | mg/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 1.2 | 0.16 | mg/kg | |
| | m,p-Xylene | 117 | 1.2 | 0.47 | mg/kg | |
| 95-47-6 | o-Xylene | 46.6 | 1.2 | 0.14 | mg/kg | |
| 1330-20-7 | Xylene (total) | 164 | 1.2 | 0.14 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-50-21 | | |
| Lab Sample ID: | MC16798-9 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 84.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 110% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-50-21 | | |
| Lab Sample ID: | MC16798-9 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8011 SW846 3546 | Percent Solids: | 84.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK20071.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.1 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0029 | 0.0013 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0029 | 0.0011 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 216% [a] | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 137% | | 61-167% |

(a) Outside control limits due to possible matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-50-21 DUP | | |
| Lab Sample ID: | MC16798-10 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 90.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K65760.D | 1 | 12/17/12 | GK | n/a | n/a | MSK2162 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.39 g | 10.0 ml | 20.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 2.7 | 0.68 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 14 | 5.4 | mg/kg | |
| 107-13-1 | Acrylonitrile | ND | 14 | 0.68 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.27 | 0.16 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 2.7 | 0.12 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 2.7 | 0.20 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 1.1 | 0.11 | mg/kg | |
| 75-25-2 | Bromoform | ND | 1.1 | 1.1 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 1.1 | 0.28 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 2.7 | 0.68 | mg/kg | UJ |
| 104-51-8 | n-Butylbenzene | 14.0 | 2.7 | 0.10 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | 3.69 | 2.7 | 0.12 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | 2.19 | 2.7 | 0.48 | mg/kg | J |
| 75-15-0 | Carbon disulfide | ND | 2.7 | 0.089 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 1.1 | 0.39 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 1.1 | 0.15 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 2.7 | 0.68 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 2.7 | 1.1 | mg/kg | |
| 67-66-3 | Chloroform | ND | 1.1 | 0.28 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 2.7 | 0.25 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 2.7 | 0.60 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 2.7 | 0.12 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 1.1 | 0.16 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.1 | 0.12 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.1 | 0.12 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.1 | 0.11 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 1.1 | 0.62 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.1 | 0.15 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.1 | 0.16 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.1 | 0.20 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.1 | 0.16 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.1 | 0.15 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-50-21 DUP | | |
| Lab Sample ID: | MC16798-10 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 90.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 1.1 | 0.20 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 2.7 | 0.12 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 2.7 | 0.47 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 2.7 | 0.14 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1.1 | 0.092 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1.1 | 0.27 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 14 | 14 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 2.7 | 0.37 | mg/kg | |
| 100-41-4 | Ethylbenzene | 50.8 | 1.1 | 0.13 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 2.7 | 0.25 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 2.7 | 0.27 | mg/kg | |
| 98-82-8 | Isopropylbenzene | 9.63 | 2.7 | 0.12 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | 2.94 | 2.7 | 0.096 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.1 | 0.16 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 2.7 | 0.27 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 2.7 | 0.27 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 1.1 | 0.63 | mg/kg | |
| 91-20-3 | Naphthalene | 15.0 | 2.7 | 0.68 | mg/kg | J |
| 103-65-1 | n-Propylbenzene | 31.0 | 2.7 | 0.55 | mg/kg | |
| 100-42-5 | Styrene | ND | 2.7 | 0.13 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 2.7 | 0.54 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.1 | 0.23 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 1.1 | 0.12 | mg/kg | |
| 108-88-3 | Toluene | 1.29 | 2.7 | 0.46 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 2.7 | 0.13 | mg/kg | UJ |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 2.7 | 0.12 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.1 | 0.17 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.1 | 0.40 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 1.1 | 0.11 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.1 | 0.16 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 2.7 | 0.16 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 134 | 2.7 | 0.12 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 38.6 | 2.7 | 0.12 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 2.7 | 0.30 | mg/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 1.1 | 0.15 | mg/kg | |
| | m,p-Xylene | 127 | 1.1 | 0.43 | mg/kg | |
| 95-47-6 | o-Xylene | 49.2 | 1.1 | 0.13 | mg/kg | |
| 1330-20-7 | Xylene (total) | 177 | 1.1 | 0.13 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presnmptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-50-21 DUP | | |
| Lab Sample ID: | MC16798-10 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 90.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 94% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 113% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-50-21 DUP | | |
| Lab Sample ID: | MC16798-10 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8011 SW846 3546 | Percent Solids: | 90.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK20072.D | 1 | 12/17/12 | AP | 12/14/12 | OP31434 | GBK720 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.7 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0027 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0027 | 0.0010 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 156% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 130% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-50-29 | | |
| Lab Sample ID: | MC16798-11 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 96.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53058.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.44 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0048 | 0.0012 | mg/kg | |
| 107-02-8 | Acrolein | ND | 0.024 | 0.0096 | mg/kg | |
| 107-13-1 | Acrylonitrile | ND | 0.024 | 0.0012 | mg/kg | |
| 71-43-2 | Benzene | 0.0037 | 0.00048 | 0.00028 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0048 | 0.00021 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0048 | 0.00036 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0019 | 0.00020 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0019 | 0.0019 | mg/kg | |
| 74-83-9 | Bromomethaue | ND | 0.0019 | 0.00050 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0048 | 0.0012 | mg/kg | |
| 104-51-8 | n-Butylbenzene | 0.0206 | 0.0048 | 0.00018 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | 0.0071 | 0.0048 | 0.00022 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | 0.0032 | 0.0048 | 0.00084 | mg/kg | J |
| 75-15-0 | Carbon disulfide | ND | 0.0048 | 0.00016 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0019 | 0.00069 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0019 | 0.00026 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0048 | 0.0012 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0048 | 0.0019 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0019 | 0.00049 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0048 | 0.00044 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0048 | 0.0011 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0048 | 0.00022 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0019 | 0.00028 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0019 | 0.00021 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0019 | 0.00022 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0019 | 0.00020 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0019 | 0.0011 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0019 | 0.00026 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0019 | 0.00027 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0019 | 0.00035 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0019 | 0.00029 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0019 | 0.00027 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Iudicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-50-29 | | |
| Lab Sample ID: | MC16798-11 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 96.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0019 | 0.00036 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0048 | 0.00022 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0048 | 0.00083 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0048 | 0.00025 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0019 | 0.00016 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0019 | 0.00047 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.024 | 0.024 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0048 | 0.00065 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0427 | 0.0019 | 0.00023 | mg/kg | |
| 87-68-3 | Hexachlorobntadiene | ND | 0.0048 | 0.00044 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0048 | 0.00048 | mg/kg | |
| 98-82-8 | Isopropylbenzene | 0.0102 | 0.0048 | 0.00022 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | 0.0043 | 0.0048 | 0.00017 | mg/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0019 | 0.00028 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0048 | 0.00048 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0048 | 0.00047 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0019 | 0.0011 | mg/kg | |
| 91-20-3 | Naphthalene | 0.0501 | 0.0048 | 0.0012 | mg/kg | |
| 103-65-1 | n-Propylbenzene | 0.0396 | 0.0048 | 0.00097 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0048 | 0.00022 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0048 | 0.00096 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0019 | 0.00041 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0019 | 0.00022 | mg/kg | |
| 108-88-3 | Toluene | 0.0330 | 0.0048 | 0.00081 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0048 | 0.00023 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0048 | 0.00022 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0019 | 0.00030 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0019 | 0.00070 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0019 | 0.00020 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0019 | 0.00029 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0048 | 0.00028 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 0.246 | 0.0048 | 0.00021 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 0.0676 | 0.0048 | 0.00020 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0048 | 0.00053 | mg/kg | |
| 75-01-4 | Vinyl chloride | 0.00074 | 0.0019 | 0.00026 | mg/kg | J |
| | m,p-Xylene | 0.111 | 0.0019 | 0.00075 | mg/kg | |
| 95-47-6 | o-Xylene | 0.0808 | 0.0019 | 0.00023 | mg/kg | |
| 1330-20-7 | Xylene (total) | 0.192 | 0.0019 | 0.00023 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-50-29 | | |
| Lab Sample ID: | MC16798-11 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8260B | Percent Solids: | 96.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 82% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a componnd

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-50-29 | | |
| Lab Sample ID: | MC16798-11 | Date Sampled: | 12/11/12 |
| Matrix: | SO - Soil | Date Received: | 12/12/12 |
| Method: | SW846 8011 SW846 3546 | Percent Solids: | 96.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK20073.D | 1 | 12/17/12 | AP | 12/14/12 | OP31434 | GBK720 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.2 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0011 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.00099 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 134% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 130% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES

## Misc. Forms

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### Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

ACCUTEST LABORATORIES

# CHAIN OF CUSTODY

Accutest Laboratories of New England
495 Technology Center West, Building One
TEL 508-481-6200 FAX 508-481-7753
www.accutest.com

PAGE 1 OF 1

FED EX Tracking #: | Bottle Order Control #:
Accutest Quote #: | Accutest Job #: MC16798

**Client / Reporting Information**

Company Name: URS
Street Address:
City: State: Zip:
Project Contact: E. Kunkel | E-mail:
Phone #: | Fax #:
Sampler(s) Name(s): W. Pennington | Phone #:

**Project Information**

Project Name: Roxana Drilling
Street:
City:
Project #: 21562735.00015
Client PO#:
Project Manager: D. Palmer

**Billing Information (If different from Report to)**

Company Name: URS
Street Address:
City: State: Zip:
Attention: PO#:

**Requested Analysis (see TEST CODE sheet)**

| Accutest Sample # | Field ID / Point of Collection | MEOH/DI Vial # | Collection Date | Collection Time | Sampled by | Matrix | # of bottles | Number of preserved Bottles: HCl | H2SO4 | NaOH | HNO3 | NONE | DI Water | MEOH | ENCORE | Bisulfate | VOC 8260 | VOC 8011 | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | VMP-47-12 | | 12/10/12 | 1340 | WP | SO | 4 | | | | | X | | X | | X | X | X | |
| -2 | VMP-47-19 | | | 1345 | | | 4 | | | | | X | | X | | X | X | X | |
| -3 | VMP-47-29 | | | 1360 | | | 4 | | | | | X | | X | | X | X | X | |
| -4 | Trip Blank | | | | | | 4 | | | | | | | | | | X | X | |
| -5 | VMP-48-13 | | 12/11/12 | 0955 | WP/BS | SO | 4 | | | | | X | | X | | X | X | X | |
| -6 | VMP-48-21 | | | 1000 | | | 4 | | | | | X | | X | | X | X | X | |
| -7 | VMP-48-27 | | | 1005 | | | 4 | | | | | X | | X | | X | X | X | |
| -8 | VMP-50-13 | | | 1330 | | | 4 | | | | | X | | X | | X | X | X | |
| -9 | VMP-50-21 | | | 1335 | | | 4 | | | | | X | | X | | X | X | X | |
| -10 | VMP-50-21 Dup | | | 1335 | | | 4 | | | | | X | | X | | X | X | X | 10D, 30I |
| -11 | VMP-50-29 | | | 1340 | | | 4 | | | | | X | | X | | X | X | X | 10K9 |

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB - Equipment Blank; RB - Rinse Blank; TB - Trip Blank

**Turnaround Time (Business days)**

- [X] Std. 10 Business Days
- [ ] Std. 5 Business Days (By Contract only)
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Labline

Approved By (Accutest PM) / Date:

**Data Deliverable Information**

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [X] FULLT1 (Level 3+4)
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [X] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

**Comments / Special Instructions**

**Sample Custody must be documented below each time samples change possession, including courier delivery.**

| | Relinquished by Sampler | Date Time | Received By | Relinquished By | Date Time | Received By |
|---|---|---|---|---|---|---|
| 1 | | 12/11/12 1430 | Fed Ex | FEDX | 12-12-12 930 | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | | | |

Custody Seal #: | Intact / Not Intact | Preserved where applicable | On Ice | Cooler Temp: 1.5

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**MC16798: Chain of Custody**
**Page 1 of 2**

ACCUTEST LABORATORIES

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC16798 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 12/12/2012 Delivery Method: Client Service Action Required at Login: No

Project: ROXANA DRILLING No. Coolers: 1 Airbill #'s:

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2. Custody Seals Intact: | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification: | Infared gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservatio | Y or N | N/A |
|---|---|---|
| 1. Trip Blank present / cooler: | ☑ ☐ | ☐ |
| 2. Trip Blank listed on COC: | ☑ ☐ | ☐ |
| 3. Samples preserved properly: | ☑ ☐ | |
| 4. VOCs headspace free: | ☑ ☐ | ☐ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles: | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree: | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1. Sample recvd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3. Condition of sample: | Intact |

| Sample Integrity - Instructions | Y or N | N/A |
|---|---|---|
| 1. Analysis requested is clear: | ☑ ☐ | |
| 2. Bottles received for unspecified tests | ☐ ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ ☐ | |
| 4. Compositing instructions clear: | ☐ ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ ☐ | ☑ |

Comments

Accutest Laboratories
V:508 481.6200
495 Technology Center West Bldg One
F 508 481 7753
Marlborough, MA
www.accutest.com

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**MC16798: Chain of Custody**
**Page 2 of 2**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC16798

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562735.00015



| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC16798-1 Collected: 10-DEC-12 13:40 By: WP | | | | Received: 12-DEC-12 By: | | |
| VMP-47-12 | | | | | | |
| MC16798-1 | SW846 8011 | 16-DEC-12 20:22 | AP | 14-DEC-12 | BJ | V8011SL |
| MC16798-1 | SM21 2540 B MOD. | 17-DEC-12 | HS | | | %SOL |
| MC16798-1 | SW846 8260B | 21-DEC-12 13:30 | AMY | | | V8260SL+ |
| MC16798-2 Collected: 10-DEC-12 13:45 By: WP | | | | Received: 12-DEC-12 By: | | |
| VMP-47-19 | | | | | | |
| MC16798-2 | SW846 8011 | 16-DEC-12 20:47 | AP | 14-DEC-12 | BJ | V8011SL |
| MC16798-2 | SM21 2540 B MOD. | 17-DEC-12 | HS | | | %SOL |
| MC16798-2 | SW846 8260B | 21-DEC-12 22:03 | AMY | | | V8260SL+ |
| MC16798-3 Collected: 10-DEC-12 13:50 By: WP | | | | Received: 12-DEC-12 By: | | |
| VMP-47-29 | | | | | | |
| MC16798-3 | SW846 8011 | 16-DEC-12 21:36 | AP | 14-DEC-12 | BJ | V8011SL |
| MC16798-3 | SM21 2540 B MOD. | 17-DEC-12 | HS | | | %SOL |
| MC16798-3 | SW846 8260B | 21-DEC-12 14:30 | AMY | | | V8260SL+ |
| MC16798-4 Collected: 10-DEC-12 00:00 By: WP | | | | Received: 12-DEC-12 By: | | |
| TRIP BLANK | | | | | | |
| MC16798-4 | SW846 8011 | 14-DEC-12 00:32 | AP | 13-DEC-12 | BJ | V8011SL |
| MC16798-4 | SW846 8260B | 20-DEC-12 12:49 | JP | | | V8260SL+ |
| MC16798-5 Collected: 11-DEC-12 09:55 By: WP | | | | Received: 12-DEC-12 By: | | |
| VMP-48-13 | | | | | | |
| MC16798-5 | SW846 8011 | 16-DEC-12 22:01 | AP | 14-DEC-12 | BJ | V8011SL |
| MC16798-5 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16798-5 | SW846 8260B | 21-DEC-12 15:01 | AMY | | | V8260SL+ |
| MC16798-6 Collected: 11-DEC-12 10:00 By: WP | | | | Received: 12-DEC-12 By: | | |
| VMP-48-21 | | | | | | |
| MC16798-6 | SW846 8011 | 16-DEC-12 22:25 | AP | 14-DEC-12 | BJ | V8011SL |
| MC16798-6 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16798-6 | SW846 8260B | 21-DEC-12 18:02 | AMY | | | V8260SL+ |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC16798

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562735.00015



| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC16798-7 Collected: 11-DEC-12 10:05 By: WP | | | | Received: 12-DEC-12 By: | | |
| VMP-48-27 | | | | | | |
| MC16798-7 | SW846 8011 | 16-DEC-12 22:50 | AP | 14-DEC-12 | BJ | V8011SL |
| MC16798-7 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16798-7 | SW846 8260B | 21-DEC-12 18:32 | AMY | | | V8260SL+ |
| MC16798-8 Collected: 11-DEC-12 13:30 By: WP | | | | Received: 12-DEC-12 By: | | |
| VMP-50-13 | | | | | | |
| MC16798-8 | SW846 8011 | 16-DEC-12 23:14 | AP | 14-DEC-12 | BJ | V8011SL |
| MC16798-8 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16798-8 | SW846 8260B | 21-DEC-12 19:02 | AMY | | | V8260SL+ |
| MC16798-9 Collected: 11-DEC-12 13:35 By: WP | | | | Received: 12-DEC-12 By: | | |
| VMP-50-21 | | | | | | |
| MC16798-9 | SW846 8011 | 16-DEC-12 23:39 | AP | 14-DEC-12 | BJ | V8011SL |
| MC16798-9 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16798-9 | SW846 8260B | 17-DEC-12 20:05 | GK | | | V8260SL+ |
| MC16798-10 Collected: 11-DEC-12 13:35 By: WP | | | | Received: 12-DEC-12 By: | | |
| VMP-50-21 DUP | | | | | | |
| MC16798-10 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16798-10 | SW846 8011 | 17-DEC-12 00:03 | AP | 14-DEC-12 | BJ | V8011SL |
| MC16798-10 | SW846 8260B | 17-DEC-12 20:32 | GK | | | V8260SL+ |
| MC16798-11 Collected: 11-DEC-12 13:40 By: WP | | | | Received: 12-DEC-12 By: | | |
| VMP-50-29 | | | | | | |
| MC16798-11 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16798-11 | SW846 8011 | 17-DEC-12 00:28 | AP | 14-DEC-12 | BJ | V8011SL |
| MC16798-11 | SW846 8260B | 21-DEC-12 19:32 | AMY | | | V8260SL+ |

# Accutest Internal Chain of Custody



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 12/12/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16798-1.1 | Walk In Ref #9 | Chris Cataldo | 12/14/12 13:59 | Retrieve from Storage |
| MC16798-1.1 | Chris Cataldo | Walk In Ref #9 | 12/14/12 20:59 | Return to Storage |
| MC16798-1.1 | Walk In Ref #9 | Hamid Siamak | 12/17/12 08:00 | Retrieve from Storage |
| MC16798-1.1 | Hamid Siamak | Walk In Ref #9 | 12/17/12 14:19 | Return to Storage |
| MC16798-1.2 | VOC Ref #10 | Amy Min Yang | 12/21/12 12:37 | Retrieve from Storage |
| MC16798-1.2 | Amy Min Yang | GCMSM | 12/21/12 12:37 | Load on Instrument |
| MC16798-1.2 | GCMSM | Amy Min Yang | 01/15/13 12:38 | Unload from Instrument |
| MC16798-1.2 | Amy Min Yang | Freezer #6 | 01/15/13 12:38 | Return to Storage |
| MC16798-1.4 | VOC Ref #10 | Gary Krasinski | 12/13/12 14:37 | Retrieve from Storage |
| MC16798-1.4 | Gary Krasinski | VOC Ref #10 | 12/14/12 10:41 | Return to Storage |
| MC16798-2.1 | Walk In Ref #9 | Chris Cataldo | 12/14/12 13:59 | Retrieve from Storage |
| MC16798-2.1 | Chris Cataldo | Walk In Ref #9 | 12/14/12 20:59 | Retnrn to Storage |
| MC16798-2.1 | Walk In Ref #9 | Hamid Siamak | 12/17/12 08:00 | Retrieve from Storage |
| MC16798-2.1 | Hamid Siamak | Walk In Ref #9 | 12/17/12 14:19 | Return to Storage |
| MC16798-2.2 | VOC Ref #10 | Amy Min Yang | 12/21/12 12:37 | Retrieve from Storage |
| MC16798-2.2 | Amy Min Yaug | GCMSM | 12/21/12 12:37 | Load on Instrument |
| MC16798-2.2 | GCMSM | Amy Min Yang | 01/15/13 12:38 | Unload from Instrument |
| MC16798-2.2 | Amy Min Yang | Freezer #6 | 01/15/13 12:38 | Return to Storage |
| MC16798-2.3 | VOC Ref #10 | Amy Min Yang | 12/21/12 18:05 | Retrieve from Storage |
| MC16798-2.3 | Amy Min Yang | GCMSM | 12/21/12 18:05 | Load on Instrument |
| MC16798-2.3 | GCMSM | Amy Min Yang | 01/15/13 12:38 | Unload from Instrument |
| MC16798-2.3 | Amy Min Yang | Freezer #6 | 01/15/13 12:38 | Return to Storage |
| MC16798-2.4 | VOC Ref #10 | Gary Krasinski | 12/13/12 14:37 | Retrieve from Storage |
| MC16798-2.4 | Gary Krasinski | VOC Ref #10 | 12/14/12 10:41 | Return to Storage |
| MC16798-3.1 | Walk In Ref #9 | Chris Cataldo | 12/14/12 13:59 | Retrieve from Storage |
| MC16798-3.1 | Chris Cataldo | Walk In Ref #9 | 12/14/12 20:59 | Return to Storage |
| MC16798-3.1 | Walk In Ref #9 | Hamid Siamak | 12/17/12 08:00 | Retrieve from Storage |
| MC16798-3.1 | Hamid Siamak | Walk In Ref #9 | 12/17/12 14:19 | Return to Storage |
| MC16798-3.2 | VOC Ref #10 | Amy Min Yang | 12/21/12 12:37 | Retrieve from Storage |
| MC16798-3.2 | Amy Min Yang | GCMSM | 12/21/12 12:37 | Load on Instrument |
| MC16798-3.2 | GCMSM | Amy Min Yang | 01/15/13 12:38 | Unload from Instrument |
| MC16798-3.2 | Amy Min Yang | Freezer #6 | 01/15/13 12:38 | Return to Storage |
| MC16798-3.4 | VOC Ref #10 | Gary Krasinski | 12/13/12 14:37 | Retrieve from Storage |
| MC16798-3.4 | Gary Krasinski | VOC Ref #10 | 12/14/12 10:41 | Return to Storage |

# Accutest Internal Chain of Custody



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 12/12/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16798-4.1 | VOC Ref #3 | Jugal Patel | 12/20/12 11:28 | Retrieve from Storage |
| MC16798-4.1 | Jugal Patel | GCMSH | 12/20/12 11:28 | Load on Instrument |
| MC16798-4.1 | GCMSH | Jugal Patel | 12/21/12 13:18 | Unload from Instrument |
| MC16798-4.1 | Jugal Patel | VOC Ref #3 | 12/21/12 13:18 | Return to Storage |
| MC16798-4.3 | VOC Ref #3 | Bijan Jafari | 12/13/12 04:40 | Retrieve from Storage |
| MC16798-4.3 | Bijan Jafari | | 12/14/12 17:43 | Depleted |
| MC16798-4.4 | VOC Ref #3 | Jugal Patel | 12/20/12 11:06 | Retrieve from Storage |
| MC16798-4.4 | Jugal Patel | GCMSH | 12/20/12 11:06 | Load on Instrument |
| MC16798-4.4 | GCMSH | Jugal Patel | 12/20/12 11:13 | Unload from Instrument |
| MC16798-4.4 | Jugal Patel | VOC Ref #3 | 12/20/12 11:13 | Return to Storage |
| MC16798-5.1 | Walk In Ref #9 | Chris Cataldo | 12/14/12 13:59 | Retrieve from Storage |
| MC16798-5.1 | Chris Cataldo | Walk In Ref #9 | 12/14/12 20:59 | Return to Storage |
| MC16798-5.2 | VOC Ref #10 | Amy Min Yang | 12/21/12 12:37 | Retrieve from Storage |
| MC16798-5.2 | Amy Min Yang | GCMSM | 12/21/12 12:37 | Load on Instrument |
| MC16798-5.2 | GCMSM | Amy Miu Yang | 01/15/13 12:38 | Unload from Instrument |
| MC16798-5.2 | Amy Min Yang | Freezer #6 | 01/15/13 12:38 | Return to Storage |
| MC16798-5.4 | VOC Ref #10 | Jaime Maslowski | 12/14/12 13:45 | Retrieve from Storage |
| MC16798-5.4 | Jaime Maslowski | VOC Ref #10 | 12/17/12 09:31 | Return to Storage |
| MC16798-6.1 | Walk In Ref #9 | Chris Cataldo | 12/14/12 13:59 | Retrieve from Storage |
| MC16798-6.1 | Chris Cataldo | Walk In Ref #9 | 12/14/12 20:59 | Return to Storage |
| MC16798-6.2 | VOC Ref #10 | Amy Min Yang | 12/21/12 12:37 | Retrieve from Storage |
| MC16798-6.2 | Amy Miu Yang | GCMSM | 12/21/12 12:37 | Load on Instrument |
| MC16798-6.2 | GCMSM | Amy Min Yaug | 01/15/13 12:38 | Unload from Instrument |
| MC16798-6.2 | Amy Min Yang | Freezer #6 | 01/15/13 12:38 | Return to Storage |
| MC16798-6.4 | VOC Ref #10 | Jaime Maslowski | 12/14/12 13:45 | Retrieve from Storage |
| MC16798-6.4 | Jaime Maslowski | VOC Ref #10 | 12/17/12 09:31 | Return to Storage |
| MC16798-7.1 | Walk In Ref #9 | Chris Cataldo | 12/14/12 13:59 | Retrieve from Storage |
| MC16798-7.1 | Chris Cataldo | Walk In Ref #9 | 12/14/12 20:59 | Return to Storage |
| MC16798-7.2 | VOC Ref #10 | Amy Min Yang | 12/21/12 12:37 | Retrieve from Storage |
| MC16798-7.2 | Amy Miu Yang | GCMSM | 12/21/12 12:37 | Load on Instrument |
| MC16798-7.2 | GCMSM | Amy Min Yang | 01/15/13 12:38 | Unload from Instrument |
| MC16798-7.2 | Amy Min Yang | Freezer #6 | 01/15/13 12:38 | Return to Storage |
| MC16798-7.4 | VOC Ref #10 | Jaime Maslowski | 12/14/12 13:45 | Retrieve from Storage |

5.3
5

# Accutest Internal Chain of Custody



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 12/12/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16798-7.4 | Jaime Maslowski | VOC Ref #10 | 12/17/12 09:31 | Return to Storage |
| MC16798-8.1 | Walk In Ref #9 | Chris Cataldo | 12/14/12 13:59 | Retrieve from Storage |
| MC16798-8.1 | Chris Cataldo | Walk In Ref #9 | 12/14/12 20:59 | Return to Storage |
| MC16798-8.2 | VOC Ref #10 | Amy Min Yang | 12/21/12 12:37 | Retrieve from Storage |
| MC16798-8.2 | Amy Min Yang | GCMSM | 12/21/12 12:37 | Load on Instrument |
| MC16798-8.2 | GCMSM | Amy Min Yang | 01/15/13 12:38 | Unload from Instrument |
| MC16798-8.2 | Amy Min Yang | Freezer #6 | 01/15/13 12:38 | Return to Storage |
| MC16798-8.4 | VOC Ref #10 | Jaime Maslowski | 12/14/12 13:45 | Retrieve from Storage |
| MC16798-8.4 | Jaime Maslowski | VOC Ref #10 | 12/17/12 09:31 | Return to Storage |
| MC16798-9.1 | Walk In Ref #9 | Chris Cataldo | 12/14/12 13:59 | Retrieve from Storage |
| MC16798-9.1 | Chris Cataldo | Walk In Ref #9 | 12/14/12 20:59 | Return to Storage |
| MC16798-9.4 | VOC Ref #10 | Jaime Maslowski | 12/14/12 13:45 | Retrieve from Storage |
| MC16798-9.4 | Jaime Maslowski | VOC Ref #10 | 12/17/12 09:31 | Return to Storage |
| MC16798-9.4 | VOC Ref #10 | Gary Krasinski | 12/17/12 10:29 | Retrieve from Storage |
| MC16798-9.4 | Gary Krasinski | VOC Ref #10 | 12/18/12 09:46 | Return to Storage |
| MC16798-10.1 | Walk In Ref #9 | Chris Cataldo | 12/14/12 14:00 | Retrieve from Storage |
| MC16798-10.1 | Chris Cataldo | Walk In Ref #9 | 12/14/12 20:59 | Return to Storage |
| MC16798-10.4 | VOC Ref #10 | Jaime Maslowski | 12/14/12 13:45 | Retrieve from Storage |
| MC16798-10.4 | Jaime Maslowski | VOC Ref #10 | 12/17/12 09:31 | Return to Storage |
| MC16798-10.4 | VOC Ref #10 | Gary Krasinski | 12/17/12 10:29 | Retrieve from Storage |
| MC16798-10.4 | Gary Krasinski | VOC Ref #10 | 12/18/12 09:46 | Return to Storage |
| MC16798-11.1 | Walk In Ref #9 | Chris Cataldo | 12/14/12 14:00 | Retrieve from Storage |
| MC16798-11.1 | Chris Cataldo | Walk In Ref #9 | 12/14/12 20:59 | Return to Storage |
| MC16798-11.3 | VOC Ref #10 | Amy Min Yang | 12/21/12 12:37 | Retrieve from Storage |
| MC16798-11.3 | Amy Min Yang | GCMSM | 12/21/12 12:37 | Load on Instrument |
| MC16798-11.3 | GCMSM | Amy Min Yang | 01/15/13 12:38 | Unload from Instrument |
| MC16798-11.3 | Amy Min Yang | Freezer #6 | 01/15/13 12:38 | Return to Storage |
| MC16798-11.4 | VOC Ref #10 | Jaime Maslowski | 12/14/12 13:45 | Retrieve from Storage |
| MC16798-11.4 | Jaime Maslowski | VOC Ref #10 | 12/17/12 09:31 | Return to Storage |
| MC16798-11.4 | VOC Ref #10 | Gary Krasinski | 12/17/12 10:29 | Retrieve from Storage |
| MC16798-11.4 | Gary Krasinski | VOC Ref #10 | 12/18/12 09:46 | Return to Storage |

5.3

New England ACCUTEST LABORATORIES

## GC/MS Volatiles



## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2162-MB | K65739.D | 1 | 12/17/12 | GK | n/a | n/a | MSK2162 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-9, MC16798-10

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 63 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 500 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 1300 | 63 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 11 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 19 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 11 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 100 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 26 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 63 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 9.2 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 11 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 44 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 8.2 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 36 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 14 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 63 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 100 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 26 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 23 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 55 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 11 | ng/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 15 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 11 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 57 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 14 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 14 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 18 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroetheue | ND | 100 | 15 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 19 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 12 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 43 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 13 | ug/kg | |

# Method Blank Summary

Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2162-MB | K65739.D | 1 | 12/17/12 | GK | n/a | n/a | MSK2162 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-9, MC16798-10

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 8.5 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 25 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 34 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 12 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 23 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 25 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 11 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.9 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 14 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 25 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 25 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 58 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 63 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 51 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 12 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 21 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 11 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 42 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 12 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 11 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 16 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 37 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 11 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 15 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 15 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 11 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzeue | ND | 250 | 11 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 28 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 14 | ug/kg | |
| | m,p-Xylene | ND | 100 | 39 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 12 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 12 | ug/kg | |

6.1.1

# Method Blank Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2162-MB | K65739.D | 1 | 12/17/12 | GK | n/a | n/a | MSK2162 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-9, MC16798-10

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 96% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/kg | |

# Method Blank Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSH1961-MB | H59388.D | 1 | 12/20/12 | JP | n/a | n/a | MSH1961 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 3.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.2 | ug/l | |
| 71-43-2 | Beuzene | ND | 0.50 | 0.24 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.62 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.3 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.58 | ng/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.78 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.0 | ng/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.4 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.61 | ug/l | |
| 135-98-8 | sec-Butylbeuzene | ND | 5.0 | 0.55 | ug/l | |
| 98-06-6 | tert-Butylbeuzene | ND | 5.0 | 0.64 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.61 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.87 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.47 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.50 | ng/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 1.3 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.50 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.73 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.65 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.48 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.53 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.93 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.45 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.64 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.7 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.62 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 75-35-4 | 1,1-Dichloroetheue | ND | 1.0 | 0.41 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.95 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.72 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.64 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 1.6 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.91 | ug/l | |

# Method Blank Summary

Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSH1961-MB | H59388.D | 1 | 12/20/12 | JP | n/a | n/a | MSH1961 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.45 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.20 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 15 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.81 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.51 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 2.1 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.50 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.57 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.41 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 2.9 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.1 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.83 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.58 | ng/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.45 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.57 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.60 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.42 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.51 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.85 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.50 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.78 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.29 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.85 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.35 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.47 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.3 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.63 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.73 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.58 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.58 | ug/l | |

# Method Blank Summary

Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSH1961-MB | H59388.D | 1 | 12/20/12 | JP | n/a | n/a | MSH1961 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-4

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 105% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

# Method Blank Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1801-MB | M53045.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-1, MC16798-2, MC16798-3, MC16798-5, MC16798-6, MC16798-7, MC16798-8, MC16798-11



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 25 | 1.3 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.29 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.37 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 2.0 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.52 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.88 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.16 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.73 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.28 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 1.3 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 2.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.52 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.46 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.23 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.30 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.22 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.23 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.21 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.27 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.29 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.37 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.37 | ng/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.23 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.87 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.26 | ug/kg | |

# Method Blank Summary

Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1801-MB | M53045.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-1, MC16798-2, MC16798-3, MC16798-5, MC16798-6, MC16798-7, MC16798-8, MC16798-11

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 0.17 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.50 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.68 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.24 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 0.46 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 0.50 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.29 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.50 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.49 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 1.2 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 1.3 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 1.0 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.23 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.43 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.23 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.85 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 0.24 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 0.23 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.31 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.73 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.30 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.29 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.22 | ng/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.21 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 0.56 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.27 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.79 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.24 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.24 | ug/kg | |

# Method Blank Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1801-MB | M53045.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-1, MC16798-2, MC16798-3, MC16798-5, MC16798-6, MC16798-7, MC16798-8, MC16798-11

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 80% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/kg | |

# Blank Spike Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2162-BS | K65737.D | 1 | 12/17/12 | GK | n/a | n/a | MSK2162 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-9, MC16798-10

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 1360 | 54* a | 70-130 |
| 107-02-8 | Acrolein | 12500 | ND | 0* b | 70-130 |
| 107-13-1 | Acrylonitrile | 2500 | 1830 | 73 | 70-130 |
| 71-43-2 | Benzene | 2500 | 2330 | 93 | 70-130 |
| 108-86-1 | Bromobenzene | 2500 | 2610 | 104 | 70-130 |
| 74-97-5 | Bromochloromethane | 2500 | 2200 | 88 | 70-130 |
| 75-27-4 | Bromodichloromethane | 2500 | 2490 | 100 | 70-130 |
| 75-25-2 | Bromoform | 2500 | 2780 | 111 | 70-130 |
| 74-83-9 | Bromomethane | 2500 | 2530 | 101 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 1400 | 56* a | 70-130 |
| 104-51-8 | n-Butylbenzene | 2500 | 2730 | 109 | 70-130 |
| 135-98-8 | sec-Bntylbenzene | 2500 | 2840 | 114 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2800 | 112 | 70-130 |
| 75-15-0 | Carbon disulfide | 2500 | 2380 | 95 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2590 | 104 | 70-130 |
| 108-90-7 | Chlorobenzene | 2500 | 2930 | 117 | 70-130 |
| 75-00-3 | Chloroethane | 2500 | 2100 | 84 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 1650 | 66 | 10-160 |
| 67-66-3 | Chloroform | 2500 | 2210 | 88 | 70-130 |
| 74-87-3 | Chloromethane | 2500 | 3100 | 124 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2700 | 108 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2850 | 114 | 70-130 |
| 124-48-1 | Dibromochloromethane | 2500 | 2940 | 118 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2880 | 115 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2870 | 115 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2570 | 103 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 3440 | 138* a | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2050 | 82 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2350 | 94 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2430 | 97 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2140 | 86 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2130 | 85 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2140 | 86 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2460 | 98 | 70-130 |
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2190 | 88 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2370 | 95 | 70-130 |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Projeet: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2162-BS | K65737.D | 1 | 12/17/12 | GK | n/a | n/a | MSK2162 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-9, MC16798-10

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2240 | 90 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2410 | 96 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 12500 | 9080 | 73 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2140 | 86 | 76-141 |
| 100-41-4 | Ethylbenzene | 2500 | 2760 | 110 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2600 | 104 | 70-130 |
| 591-78-6 | 2-Hexanone | 2500 | 1990 | 80 | 70-130 |
| 98-82-8 | Isopropylbenzene | 2500 | 2870 | 115 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2810 | 112 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2070 | 83 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 1840 | 74 | 70-130 |
| 74-95-3 | Methylene bromide | 2500 | 2330 | 93 | 70-130 |
| 75-09-2 | Methylene chloride | 2500 | 2310 | 92 | 70-130 |
| 91-20-3 | Napbthalene | 2500 | 1680 | 67* a | 70-130 |
| 103-65-1 | n-Propylbenzene | 2500 | 2760 | 110 | 70-130 |
| 100-42-5 | Styrene | 2500 | 2710 | 108 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2880 | 115 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2250 | 90 | 70-130 |
| 127-18-4 | Tetrachloroethene | 2500 | 2980 | 119 | 70-130 |
| 108-88-3 | Toluene | 2500 | 2410 | 96 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 1580 | 63* a | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2090 | 84 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2300 | 92 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2210 | 88 | 70-130 |
| 79-01-6 | Trichloroethene | 2500 | 2470 | 99 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2390 | 96 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2260 | 90 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2650 | 106 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2570 | 103 | 70-130 |
| 108-05-4 | Vinyl Acetate | 2500 | 1720 | 69* a | 70-130 |
| 75-01-4 | Vinyl chloride | 2500 | 2760 | 110 | 70-130 |
| | m,p-Xylene | 5000 | 5870 | 117 | 70-130 |
| 95-47-6 | o-Xylene | 2500 | 3060 | 122 | 70-130 |
| 1330-20-7 | Xylene (total) | 7500 | 8930 | 119 | 70-130 |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK2162-BS | K65737.D | 1 | 12/17/12 | GK | n/a | n/a | MSK2162 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-9, MC16798-10

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 90% | 70-130% |
| 2037-26-5 | Tolnene-D8 | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical reqnirements.
(b) Outside control limits due to standard degradation. Refer to Continuing Calibration.

6.2.1

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* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSH1961-BS | H59387.D | 1 | 12/20/12 | JP | n/a | n/a | MSH1961 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-4

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 58.0 | 116 | 70-130 |
| 107-02-8 | Acrolein | 250 | 109 | 44* [a] | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 38.3 | 77 | 70-130 |
| 71-43-2 | Benzene | 50 | 46.4 | 93 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 50.0 | 100 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 48.8 | 98 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 57.7 | 115 | 70-130 |
| 75-25-2 | Bromoform | 50 | 59.5 | 119 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 47.9 | 96 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 49.3 | 99 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 52.5 | 105 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 54.3 | 109 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 55.6 | 111 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 49.5 | 99 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 65.6 | 131* [a] | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 50.4 | 101 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 46.9 | 94 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 58.5 | 117 | 70-130 |
| 67-66-3 | Chloroform | 50 | 54.0 | 108 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 57.2 | 114 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 53.4 | 107 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 55.9 | 112 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 52.0 | 104 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 52.3 | 105 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 53.4 | 107 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 48.8 | 98 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 65.6 | 131* [a] | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 50.4 | 101 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 54.8 | 110 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 50.9 | 102 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 48.4 | 97 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 48.5 | 97 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 46.0 | 92 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 46.3 | 93 | 70-130 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 68.0 | 136* [a] | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 51.7 | 103 | 70-130 |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSH1961-BS | H59387.D | 1 | 12/20/12 | JP | n/a | n/a | MSH1961 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-4

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 48.7 | 97 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 54.6 | 109 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 214 | 86 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 48.1 | 96 | 77-137 |
| 100-41-4 | Ethylbenzene | 50 | 50.1 | 100 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 50.0 | 100 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 48.9 | 98 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 54.3 | 109 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 51.5 | 103 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 49.9 | 100 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 42.6 | 85 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 47.8 | 96 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 47.9 | 96 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 41.3 | 83 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 54.3 | 109 | 70-130 |
| 100-42-5 | Styrene | 50 | 52.2 | 104 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 62.9 | 126 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 47.1 | 94 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 49.6 | 99 | 70-130 |
| 108-88-3 | Toluene | 50 | 47.3 | 95 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 43.6 | 87 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 45.8 | 92 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 59.0 | 118 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 46.7 | 93 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 49.4 | 99 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 56.4 | 113 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 53.0 | 106 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 50.4 | 101 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 49.8 | 100 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 45.5 | 91 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 52.2 | 104 | 70-130 |
| | m,p-Xylene | 100 | 102 | 102 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 53.2 | 106 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 156 | 104 | 70-130 |

* = Outside of Control Limits.

# Blank Spike Summary

Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSH1961-BS | H59387.D | 1 | 12/20/12 | JP | n/a | n/a | MSH1961 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-4

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 109% | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 102% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1801-BS | M53043.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-1, MC16798-2, MC16798-3, MC16798-5, MC16798-6, MC16798-7, MC16798-8, MC16798-11

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 37.5 | 75 | 70-130 |
| 107-02-8 | Acrolein | 250 | 118 | 47* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 55.1 | 110 | 70-130 |
| 71-43-2 | Benzene | 50 | 50.9 | 102 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 47.4 | 95 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 49.0 | 98 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 47.4 | 95 | 70-130 |
| 75-25-2 | Bromoform | 50 | 46.9 | 94 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 55.4 | 111 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 52.0 | 104 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 54.1 | 108 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 51.0 | 102 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 49.7 | 99 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 61.1 | 122 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 56.9 | 114 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 46.4 | 93 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 58.4 | 117 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 50.3 | 101 | 10-160 |
| 67-66-3 | Chloroform | 50 | 50.2 | 100 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 62.6 | 125 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 46.9 | 94 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 48.2 | 96 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 46.1 | 92 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 44.6 | 89 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 46.5 | 93 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 46.8 | 94 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 63.6 | 127 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 53.7 | 107 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 48.7 | 97 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 59.9 | 120 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 49.5 | 99 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 54.4 | 109 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 47.7 | 95 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 47.9 | 96 | 70-130 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 56.0 | 112 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 57.1 | 114 | 70-130 |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1801-BS | M53043.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-1, MC16798-2, MC16798-3, MC16798-5, MC16798-6, MC16798-7, MC16798-8, MC16798-11

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 47.2 | 94 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 50.3 | 101 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 291 | 116 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 54.8 | 110 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 51.0 | 102 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 54.0 | 108 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 65.7 | 131* a | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 49.8 | 100 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 54.8 | 110 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 46.7 | 93 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 60.8 | 122 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 49.2 | 98 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 46.5 | 93 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 61.1 | 122 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 49.6 | 99 | 70-130 |
| 100-42-5 | Styrene | 50 | 47.4 | 95 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 47.1 | 94 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 50.1 | 100 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 55.3 | 111 | 70-130 |
| 108-88-3 | Toluene | 50 | 53.3 | 107 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 49.9 | 100 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 50.3 | 101 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 55.5 | 111 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 48.1 | 96 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 53.7 | 107 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 62.8 | 126 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 53.3 | 107 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 49.6 | 99 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 50.3 | 101 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 41.8 | 84 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 58.7 | 117 | 70-130 |
| | m,p-Xylene | 100 | 101 | 101 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 48.4 | 97 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 149 | 99 | 70-130 |

* = Outside of Control Limits.

6.2.3

# Blank Spike Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1801-BS | M53043.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-1, MC16798-2, MC16798-3, MC16798-5, MC16798-6, MC16798-7, MC16798-8, MC16798-11

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | 70-130% |
| 2037-26-5 | Toluene-D8 | 89% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 82% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16697-2MS | K65753.D | 1 | 12/17/12 | GK | n/a | n/a | MSK2162 |
| MC16697-2MSD | K65754.D | 1 | 12/17/12 | GK | n/a | n/a | MSK2162 |
| MC16697-2 | K65744.D | 1 | 12/17/12 | GK | n/a | n/a | MSK2162 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-9, MC16798-10

| CAS No. | Compound | MC16697-2 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 3200 | 2360 | 74 | 2280 | 71 | 3 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 16000 | 3190 | 20* [a] | 3360 | 21* [a] | 5 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 3200 | 2350 | 73 | 2290 | 71 | 3 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 3200 | 2900 | 91 | 2900 | 91 | 0 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 3200 | 3300 | 103 | 3280 | 102 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 3200 | 2750 | 86 | 2740 | 86 | 0 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 3200 | 3040 | 95 | 2990 | 93 | 2 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 3200 | 3590 | 112 | 3600 | 112 | 0 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 3200 | 2700 | 84 | 2650 | 83 | 2 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 3200 | 2580 | 81 | 2480 | 77 | 4 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 3200 | 3310 | 103 | 3280 | 102 | 1 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 3200 | 3690 | 115 | 3700 | 115 | 0 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 3200 | 3790 | 118 | 3690 | 115 | 3 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 3200 | 2750 | 86 | 2870 | 90 | 4 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 3200 | 3240 | 101 | 3190 | 100 | 2 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 3200 | 3750 | 117 | 3670 | 115 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 3200 | 2460 | 77 | 2560 | 80 | 4 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 3200 | 2460 | 77 | 2400 | 75 | 2 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 3200 | 2760 | 86 | 2720 | 85 | 1 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 3200 | 3260 | 102 | 3180 | 99 | 2 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 3200 | 3640 | 114 | 3600 | 112 | 1 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 3200 | 3630 | 113 | 3600 | 112 | 1 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 3200 | 3550 | 111 | 3490 | 109 | 2 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 3200 | 3650 | 114 | 3600 | 112 | 1 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 3200 | 3660 | 114 | 3700 | 115 | 1 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 3200 | 3190 | 100 | 3180 | 99 | 0 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 3200 | 3120 | 97 | 3080 | 96 | 1 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 3200 | 2640 | 82 | 2550 | 80 | 3 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 3200 | 2860 | 89 | 2850 | 89 | 0 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 3200 | 2780 | 87 | 2770 | 86 | 0 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 3200 | 2700 | 84 | 2690 | 84 | 0 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 3200 | 2710 | 85 | 2750 | 86 | 1 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 3200 | 2850 | 89 | 2850 | 89 | 0 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 3200 | 3130 | 98 | 3110 | 97 | 1 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 3200 | 2640 | 82 | 2600 | 81 | 2 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 3200 | 2970 | 93 | 2940 | 92 | 1 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16697-2MS | K65753.D | 1 | 12/17/12 | GK | n/a | n/a | MSK2162 |
| MC16697-2MSD | K65754.D | 1 | 12/17/12 | GK | n/a | n/a | MSK2162 |
| MC16697-2 | K65744.D | 1 | 12/17/12 | GK | n/a | n/a | MSK2162 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-9, MC16798-10

| CAS No. | Compound | MC16697-2 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 3200 | 2960 | 92 | 2970 | 93 | 0 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 3200 | 2950 | 92 | 2910 | 91 | 1 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 16000 | 17800 | 111 | 18000 | 112 | 1 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 3200 | 2870 | 90 | 2820 | 88 | 2 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 3200 | 3480 | 109 | 3400 | 106 | 2 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 3200 | 3360 | 105 | 3360 | 105 | 0 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 3200 | 2990 | 93 | 2910 | 91 | 3 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 3200 | 3740 | 117 | 3680 | 115 | 2 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 3200 | 3350 | 105 | 3320 | 104 | 1 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 3200 | 2730 | 85 | 2680 | 84 | 2 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 3200 | 2560 | 80 | 2580 | 81 | 1 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 3200 | 2890 | 90 | 2950 | 92 | 2 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 3200 | 2730 | 85 | 2650 | 83 | 3 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 3200 | 3070 | 96 | 3010 | 94 | 2 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 3200 | 3700 | 115 | 3650 | 114 | 1 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 3200 | 3440 | 107 | 3340 | 104 | 3 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 3200 | 3590 | 112 | 3580 | 112 | 0 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 3200 | 2980 | 93 | 2900 | 91 | 3 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 3200 | 3550 | 111 | 3480 | 109 | 2 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 3200 | 3020 | 94 | 2970 | 93 | 2 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 3200 | 2910 | 91 | 2920 | 91 | 0 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 3200 | 3050 | 95 | 3080 | 96 | 1 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 3200 | 2920 | 91 | 2860 | 89 | 2 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 3200 | 2840 | 89 | 2890 | 90 | 2 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 3200 | 3030 | 95 | 3010 | 94 | 1 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 3200 | 2970 | 93 | 2920 | 91 | 2 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 3200 | 2930 | 91 | 2930 | 91 | 0 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 3200 | 3390 | 106 | 3360 | 105 | 1 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 3200 | 3380 | 105 | 3340 | 104 | 1 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 3200 | 2430 | 76 | 2390 | 75 | 2 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 3200 | 2860 | 89 | 2750 | 86 | 4 | 70-130/30 |
| | m,p-Xylene | ND | | 6410 | 7500 | 117 | 7230 | 113 | 4 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 3200 | 3980 | 124 | 3810 | 119 | 4 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 9610 | 11500 | 120 | 11000 | 114 | 4 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16697-2MS | K65753.D | 1 | 12/17/12 | GK | n/a | n/a | MSK2162 |
| MC16697-2MSD | K65754.D | 1 | 12/17/12 | GK | n/a | n/a | MSK2162 |
| MC16697-2 | K65744.D | 1 | 12/17/12 | GK | n/a | n/a | MSK2162 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-9, MC16798-10

| CAS No. | Surrogate Recoveries | MS | MSD | MC16697-2 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 89% | 88% | 96% | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | 95% | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 100% | 100% | 99% | 70-130% |

(a) Outside control limits due to standard degradation. Refer to Continuing Calibration.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16752-3MS | H59405.D | 1 | 12/20/12 | JP | n/a | n/a | MSH1961 |
| MC16752-3MSD | H59406.D | 1 | 12/20/12 | JP | n/a | n/a | MSH1961 |
| MC16752-3 | H59396.D | 1 | 12/20/12 | JP | n/a | n/a | MSH1961 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-4

| CAS No. | Compound | MC16752-3 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 50 | 41.1 | 82 | 40.3 | 81 | 2 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 250 | 94.3 | 38* [a] | 95.1 | 38* [a] | 1 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 50 | 35.9 | 72 | 37.0 | 74 | 3 | 70-130/30 |
| 71-43-2 | Benzene | 97.1 | | 50 | 136 | 78 | 134 | 74 | 1 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 50 | 51.0 | 102 | 50.5 | 101 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 50 | 50.1 | 100 | 49.7 | 99 | 1 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 50 | 59.5 | 119 | 56.1 | 112 | 6 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 50 | 56.6 | 113 | 54.3 | 109 | 4 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 50 | 46.9 | 94 | 47.4 | 95 | 1 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 50 | 42.3 | 85 | 42.2 | 84 | 0 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 50 | 55.0 | 110 | 54.1 | 108 | 2 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 50 | 55.3 | 111 | 53.7 | 107 | 3 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 50 | 59.3 | 119 | 57.7 | 115 | 3 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 50 | 43.6 | 87 | 43.5 | 87 | 0 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 50 | 72.8 | 146* [a] | 65.8 | 132* [a] | 10 | 70-130/30 |
| 108-90-7 | Chlorobeuzene | ND | | 50 | 51.0 | 102 | 50.3 | 101 | 1 | 70-130/30 |
| 75-00-3 | Chloroethane | 4.3 | | 50 | 50.2 | 92 | 50.3 | 92 | 0 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 50 | 15.2 | 30* [a] | 15.5 | 31* [a] | 2 | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 50 | 56.4 | 113 | 55.2 | 110 | 2 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 50 | 56.4 | 113 | 57.3 | 115 | 2 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 50 | 54.7 | 109 | 53.4 | 107 | 2 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 50 | 57.2 | 114 | 55.5 | 111 | 3 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 50 | 50.4 | 101 | 48.8 | 98 | 3 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 50 | 55.8 | 112 | 54.8 | 110 | 2 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 50 | 55.0 | 110 | 54.6 | 109 | 1 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 50 | 50.3 | 101 | 49.0 | 98 | 3 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 50 | 69.0 | 138* [a] | 65.2 | 130 | 6 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | 26.1 | | 50 | 73.5 | 95 | 74.3 | 96 | 1 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 50 | 59.0 | 118 | 54.5 | 109 | 8 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 50 | 51.2 | 102 | 51.2 | 102 | 0 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 50 | 49.0 | 98 | 48.8 | 98 | 0 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 50 | 47.4 | 95 | 47.4 | 95 | 0 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 50 | 45.8 | 92 | 46.0 | 92 | 0 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 50 | 46.3 | 93 | 45.1 | 90 | 3 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 50 | 70.1 | 140* [a] | 66.0 | 132* [a] | 6 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 50 | 53.6 | 107 | 51.4 | 103 | 4 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16752-3MS | H59405.D | 1 | 12/20/12 | JP | n/a | n/a | MSH1961 |
| MC16752-3MSD | H59406.D | 1 | 12/20/12 | JP | n/a | n/a | MSH1961 |
| MC16752-3 | H59396.D | 1 | 12/20/12 | JP | n/a | n/a | MSH1961 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-4

| CAS No. | Compound | MC16752-3 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 50 | 49.2 | 98 | 47.8 | 96 | 3 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 50 | 54.7 | 109 | 53.5 | 107 | 2 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 250 | 203 | 81 | 200 | 80 | 1 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 50 | 49.2 | 98 | 48.3 | 97 | 2 | 72-139/30 |
| 100-41-4 | Ethylbenzene | 105 | | 50 | 132 | 54* [b] | 130 | 50* [b] | 2 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 50 | 53.7 | 107 | 51.3 | 103 | 5 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 50 | 46.5 | 93 | 46.9 | 94 | 1 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | 44.2 | | 50 | 93.4 | 98 | 91.9 | 95 | 2 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 50 | 52.5 | 105 | 50.8 | 102 | 3 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 50 | 50.3 | 101 | 50.5 | 101 | 0 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 50 | 44.3 | 89 | 44.5 | 89 | 0 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 50 | 50.8 | 102 | 48.6 | 97 | 4 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 50 | 47.4 | 95 | 48.7 | 97 | 3 | 70-130/30 |
| 91-20-3 | Naphthalene | 11.0 | | 50 | 58.6 | 95 | 58.0 | 94 | 1 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 9.2 | | 50 | 62.9 | 107 | 62.0 | 106 | 1 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 50 | 37.6 | 75 | 36.9 | 74 | 2 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 50 | 63.3 | 127 | 60.6 | 121 | 4 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 50 | 47.1 | 94 | 47.7 | 95 | 1 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 50 | 49.6 | 99 | 48.6 | 97 | 2 | 70-130/30 |
| 108-88-3 | Toluene | 7.1 | | 50 | 55.4 | 97 | 53.6 | 93 | 3 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 50 | 48.5 | 97 | 47.8 | 96 | 1 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 50 | 52.4 | 105 | 50.6 | 101 | 3 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 50 | 63.0 | 126 | 59.6 | 119 | 6 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 50 | 48.1 | 96 | 47.1 | 94 | 2 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 50 | 51.5 | 103 | 49.7 | 99 | 4 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 50 | 61.4 | 123 | 56.8 | 114 | 8 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 50 | 50.5 | 101 | 50.4 | 101 | 0 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.9 | J | 50 | 48.4 | 93 | 47.3 | 91 | 2 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 50 | 46.3 | 93 | 45.5 | 91 | 2 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 50 | 40.8 | 82 | 42.2 | 84 | 3 | 70-130/30 |
| 75-01-4 | Vinyl chloride | 3.7 | | 50 | 54.8 | 102 | 54.4 | 101 | 1 | 70-130/30 |
| | m,p-Xylene | 8.7 | | 100 | 105 | 96 | 102 | 93 | 3 | 70-130/30 |
| 95-47-6 | o-Xylene | 35.0 | | 50 | 81.3 | 93 | 79.2 | 88 | 3 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 43.7 | | 150 | 187 | 96 | 182 | 92 | 3 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16752-3MS | H59405.D | 1 | 12/20/12 | JP | n/a | n/a | MSH1961 |
| MC16752-3MSD | H59406.D | 1 | 12/20/12 | JP | n/a | n/a | MSH1961 |
| MC16752-3 | H59396.D | 1 | 12/20/12 | JP | n/a | n/a | MSH1961 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-4

| CAS No. | Surrogate Recoveries | MS | MSD | MC16752-3 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 108% | 109% | 103% | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | 98% | 94% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 102% | 101% | 106% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits due to high level in sample relative to spike amount.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16889-1MS | M53064.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| MC16889-1MSD | M53065.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| MC16889-1 | M53059.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-1, MC16798-2, MC16798-3, MC16798-5, MC16798-6, MC16798-7, MC16798-8, MC16798-11

| CAS No. | Compound | MC16889-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 52.8 | 40.1 | 76 | 78.5 | 154* [a] | 65* [b] | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 264 | 52.8 | 20* [a] | 59.6 | 23* [a] | 12 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 52.8 | 22.2 | 42* [a] | 41.5 | 82 | 61* [b] | 70-130/30 |
| 71-43-2 | Benzene | ND | | 52.8 | 13.5 | 26* [a] | 34.9 | 69* [a] | 88* [b] | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 52.8 | 7.5 | 14* [a] | 26.9 | 53* [a] | 113* [b] | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 52.8 | 20.1 | 38* [a] | 37.3 | 73 | 60* [b] | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 52.8 | 15.4 | 29* [a] | 34.8 | 68* [a] | 77* [b] | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 52.8 | 15.4 | 29* [a] | 33.1 | 65* [a] | 73* [b] | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 52.8 | 21.6 | 41* [a] | 44.4 | 87 | 69* [b] | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 52.8 | 22.3 | 42* [a] | 45.0 | 88 | 67* [b] | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 52.8 | 2.7 | 5* [a] | 24.0 | 47* [a] | 160* [b] | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 52.8 | 2.8 | 5* [a] | 23.7 | 47* [a] | 158* [b] | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 52.8 | 2.9 | 5* [a] | 23.0 | 45* [a] | 155* [b] | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 52.8 | 19.5 | 37* [a] | 44.4 | 87 | 78* [b] | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 52.8 | 10 | 19* [a] | 35.6 | 70 | 112* [b] | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 52.8 | 8.7 | 16* [a] | 28.4 | 56* [a] | 106* [b] | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 52.8 | 20.5 | 39* [a] | 45.4 | 89 | 76* [b] | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 52.8 | ND | 0* [a] | ND | 0* [a] | nc | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 52.8 | 16.1 | 31* [a] | 35.6 | 70 | 75* [b] | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 52.8 | 23.4 | 44* [a] | 47.7 | 94 | 68* [b] | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 52.8 | 4.5 | 9* [a] | 23.4 | 46* [a] | 135* [b] | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 52.8 | 4.6 | 9* [a] | 24.1 | 47* [a] | 136* [b] | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 52.8 | 15.7 | 30* [a] | 33.3 | 65* [a] | 72* [b] | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 52.8 | 4.8 | 9* [a] | 22.7 | 45* [a] | 130* [b] | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 52.8 | 4.5 | 9* [a] | 23.3 | 46* [a] | 135* [b] | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 52.8 | 4.7 | 9* [a] | 23.5 | 46* [a] | 133* [b] | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 52.8 | 15.0 | 28* [a] | 43.2 | 85 | 97* [b] | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethaue | ND | | 52.8 | 16.5 | 31* [a] | 37.5 | 74 | 78* [b] | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 52.8 | 18.8 | 36* [a] | 36.1 | 71 | 63* [b] | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 52.8 | 17.8 | 34* [a] | 44.0 | 86 | 85* [b] | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 52.8 | 16.6 | 31* [a] | 35.5 | 70 | 73* [b] | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 52.8 | 17.4 | 33* [a] | 39.6 | 78 | 78* [b] | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 52.8 | 13.9 | 26* [a] | 33.0 | 65* [a] | 81* [b] | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 52.8 | 15.6 | 30* [a] | 33.2 | 65* [a] | 72* [b] | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 52.8 | 11.9 | 23* [a] | 37.1 | 73 | 103* [b] | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 52.8 | 11.6 | 22* [a] | 36.4 | 72 | 103* [b] | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16889-1MS | M53064.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| MC16889-1MSD | M53065.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| MC16889-1 | M53059.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-1, MC16798-2, MC16798-3, MC16798-5, MC16798-6, MC16798-7, MC16798-8, MC16798-11

| CAS No. | Compound | MC16889-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 52.8 | 14.0 | 27* a | 31.5 | 62* a | 77* b | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 52.8 | 15.9 | 30* a | 34.0 | 67* a | 73* b | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 264 | 90.9 | 34* a | 290 | 114 | 105* b | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 52.8 | 14.8 | 28* a | 33.3 | 65 | 77* b | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 52.8 | 5.8 | 11* a | 28.2 | 55* a | 132* b | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 52.8 | 2.6 | 5* a | 24.4 | 48* a | 161* b | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 52.8 | 18.7 | 35* a | 40.2 | 79 | 73* b | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 52.8 | 3.6 | 7* a | 23.6 | 46* a | 147* b | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 52.8 | 2.9 | 5* a | 25.4 | 50* a | 159* b | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 52.8 | 15.4 | 29* a | 29.3 | 58* a | 62* b | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 52.8 | 19.5 | 37* a | 40.7 | 80 | 70* b | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 52.8 | 19.7 | 37* a | 37.2 | 73 | 62* b | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 52.8 | 18.8 | 36* a | 36.2 | 71 | 63* b | 70-130/30 |
| 91-20-3 | Naphthalene | 16.5 | | 52.8 | 3.9 | -24* a | 17.4 | 2* a | 127* b | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 52.8 | 3.4 | 6* a | 23.9 | 47* a | 150* b | 70-130/30 |
| 100-42-5 | Styrene | ND | | 52.8 | ND | 0* a | 3.1 | 6* a | 200* b | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 52.8 | 9.5 | 18* a | 30.1 | 59* a | 104* b | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 52.8 | 14.7 | 28* a | 34.5 | 68* a | 80* b | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 52.8 | 6.6 | 13* a | 31.1 | 61* a | 130* b | 70-130/30 |
| 108-88-3 | Toluene | 1.3 | J | 52.8 | 10.3 | 17* a | 33.4 | 63* a | 106* b | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 52.8 | 3.1 | 6* a | 19.6 | 39* a | 145* b | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 52.8 | 3.1 | 6* a | 19.1 | 38* a | 144* b | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 52.8 | 11.7 | 22* a | 35.9 | 71 | 102* b | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 52.8 | 16.1 | 31* a | 33.9 | 67* a | 71* b | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 52.8 | 12.3 | 23* a | 34.6 | 68* a | 95* b | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 52.8 | 14.1 | 27* a | 42.1 | 83 | 100* b | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 52.8 | 14.9 | 28* a | 34.5 | 68* a | 79* b | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 52.8 | 2.7 | 5* a | 21.7 | 43* a | 156* b | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 52.8 | 4.0 | 8* a | 25.8 | 51* a | 146* b | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 52.8 | 6.7 | 13* a | 16.6 | 33* a | 85* b | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 52.8 | 21.0 | 40* a | 42.9 | 84 | 69* b | 70-130/30 |
| | m,p-Xylene | 2.3 | J | 106 | 11.3 | 9* a | 54.0 | 51* a | 131* b | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 52.8 | 5.7 | 11* a | 26.0 | 51* a | 128* b | 70-130/30 |
| 1330-20-7 | Xylene (total) | 2.3 | J | 158 | 17.0 | 9* a | 80.0 | 51* a | 130* b | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16889-1MS | M53064.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| MC16889-1MSD | M53065.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| MC16889-1 | M53059.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16798-1, MC16798-2, MC16798-3, MC16798-5, MC16798-6, MC16798-7, MC16798-8, MC16798-11

| CAS No. | Surrogate Recoveries | MS | MSD | MC16889-1 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | 83% | 79% | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | 88% | 90% | 70-130% |
| 460-00-4 | 4-Bromoflnorobenzene | 80% | 82% | 83% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) High RPD due to possible matrix interference and/or sample non-homogeneity.

* = Outside of Control Limits.

6.3.3

# Volatile Internal Standard Area Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSH1961-CC1910 | Injection Date: | 12/20/12 |
| Lab File ID: | H59386.D | Injection Time: | 10:08 |
| Instrument ID: | GCMSH | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 209170 | 8.70 | 302978 | 9.57 | 138999 | 12.83 | 165510 | 15.39 | 44134 | 6.27 |
| Upper Limit [a] | 418340 | 9.20 | 605956 | 10.07 | 277998 | 13.33 | 331020 | 15.89 | 88268 | 6.77 |
| Lower Limit [b] | 104585 | 8.20 | 151489 | 9.07 | 69500 | 12.33 | 82755 | 14.89 | 22067 | 5.77 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSH1961-BS | 209415 | 8.70 | 305344 | 9.57 | 138721 | 12.83 | 164139 | 15.40 | 43072 | 6.27 |
| MSH1961-MB | 192306 | 8.70 | 265966 | 9.57 | 116693 | 12.83 | 135336 | 15.40 | 39193 | 6.27 |
| ZZZZZZ | 181898 | 8.71 | 254446 | 9.57 | 110631 | 12.83 | 126232 | 15.40 | 32539 | 6.28 |
| ZZZZZZ | 174614 | 8.70 | 241188 | 9.57 | 105293 | 12.83 | 123329 | 15.40 | 33698 | 6.28 |
| ZZZZZZ | 182552 | 8.70 | 252435 | 9.57 | 110304 | 12.83 | 125912 | 15.40 | 35972 | 6.28 |
| MC16798-4 | 174920 | 8.70 | 239815 | 9.57 | 106082 | 12.83 | 121518 | 15.40 | 32158 | 6.28 |
| ZZZZZZ | 181740 | 8.70 | 247121 | 9.57 | 107102 | 12.83 | 127483 | 15.40 | 37865 | 6.28 |
| ZZZZZZ | 168225 | 8.70 | 234450 | 9.57 | 102244 | 12.83 | 116362 | 15.40 | 33903 | 6.28 |
| ZZZZZZ | 167513 | 8.71 | 234668 | 9.57 | 102777 | 12.83 | 119682 | 15.40 | 33014 | 6.28 |
| MC16752-3 | 167800 | 8.71 | 250606 | 9.57 | 106861 | 12.83 | 138480 | 15.40 | 33223 | 6.28 |
| ZZZZZZ | 193755 | 8.70 | 260218 | 9.57 | 110290 | 12.83 | 130996 | 15.40 | 37814 | 6.28 |
| MC16782-1 | 181867 | 8.70 | 249661 | 9.57 | 110592 | 12.83 | 127718 | 15.40 | 37152 | 6.28 |
| ZZZZZZ | 170045 | 8.70 | 238146 | 9.58 | 103754 | 12.83 | 119707 | 15.40 | 35856 | 6.28 |
| ZZZZZZ | 173842 | 8.70 | 240972 | 9.57 | 105289 | 12.83 | 122250 | 15.40 | 34758 | 6.29 |
| ZZZZZZ | 169531 | 8.71 | 231620 | 9.57 | 103129 | 12.83 | 119477 | 15.40 | 33801 | 6.28 |
| ZZZZZZ | 164860 | 8.70 | 231181 | 9.57 | 100785 | 12.83 | 116349 | 15.40 | 33564 | 6.27 |
| ZZZZZZ | 163387 | 8.71 | 230948 | 9.57 | 101972 | 12.83 | 117937 | 15.40 | 37024 | 6.29 |
| ZZZZZZ | 163804 | 8.71 | 225993 | 9.57 | 100693 | 12.83 | 118069 | 15.40 | 35364 | 6.28 |
| MC16752-3MS | 182107 | 8.70 | 259219 | 9.57 | 122877 | 12.83 | 146662 | 15.40 | 35604 | 6.26 |
| MC16752-3MSD | 203320 | 8.70 | 296748 | 9.57 | 137661 | 12.83 | 160842 | 15.40 | 42701 | 6.27 |
| MC16782-1MS | 218488 | 8.70 | 317487 | 9.57 | 144466 | 12.83 | 170179 | 15.39 | 44206 | 6.28 |
| MC16782-1MSD | 221500 | 8.70 | 321336 | 9.57 | 145890 | 12.83 | 171049 | 15.40 | 46367 | 6.27 |
| ZZZZZZ | 204295 | 8.70 | 289000 | 9.57 | 123586 | 12.83 | 145583 | 15.40 | 42590 | 6.28 |
| ZZZZZZ | 199736 | 8.71 | 279696 | 9.57 | 121224 | 12.83 | 140183 | 15.40 | 41636 | 6.28 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSK2162-CC2132 | Injection Date: | 12/17/12 |
| Lab File ID: | K65736.D | Injection Time: | 09:38 |
| Instrument ID: | GCMSK | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 124232 | 8.82 | 194437 | 9.67 | 90251 | 12.93 | 100484 | 15.49 | 22528 | 6.42 |
| Upper Limit [a] | 248464 | 9.32 | 388874 | 10.17 | 180502 | 13.43 | 200968 | 15.99 | 45056 | 6.92 |
| Lower Limit [b] | 62116 | 8.32 | 97219 | 9.17 | 45126 | 12.43 | 50242 | 14.99 | 11264 | 5.92 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSK2162-BS | 133095 | 8.82 | 191048 | 9.67 | 85165 | 12.93 | 99918 | 15.49 | 21476 | 6.43 |
| MSK2162-MB | 131046 | 8.82 | 193358 | 9.67 | 81745 | 12.93 | 102844 | 15.49 | 17153 | 6.41 |
| ZZZZZZ | 130576 | 8.82 | 193131 | 9.67 | 82556 | 12.93 | 104656 | 15.49 | 18940 | 6.41 |
| ZZZZZZ | 136824 | 8.82 | 199082 | 9.67 | 86773 | 12.93 | 104389 | 15.49 | 22191 | 6.45 |
| ZZZZZZ | 133426 | 8.82 | 196557 | 9.67 | 84600 | 12.93 | 104448 | 15.49 | 22123 | 6.42 |
| MC16697-2 | 133620 | 8.82 | 193215 | 9.67 | 84022 | 12.93 | 103414 | 15.49 | 21803 | 6.42 |
| ZZZZZZ | 131818 | 8.82 | 192150 | 9.67 | 83564 | 12.93 | 99534 | 15.49 | 21301 | 6.41 |
| ZZZZZZ | 136632 | 8.82 | 200759 | 9.67 | 86825 | 12.93 | 101634 | 15.49 | 24810 | 6.42 |
| ZZZZZZ | 138214 | 8.82 | 202828 | 9.67 | 86812 | 12.93 | 104405 | 15.49 | 25691 | 6.42 |
| ZZZZZZ | 140849 | 8.82 | 207309 | 9.67 | 90850 | 12.93 | 105232 | 15.49 | 25403 | 6.42 |
| ZZZZZZ | 140939 | 8.82 | 206511 | 9.67 | 90808 | 12.93 | 109047 | 15.49 | 26049 | 6.42 |
| ZZZZZZ | 146040 | 8.82 | 211073 | 9.67 | 91061 | 12.93 | 111890 | 15.49 | 28288 | 6.43 |
| MC16697-2MS | 137239 | 8.82 | 200018 | 9.67 | 89784 | 12.93 | 104823 | 15.49 | 27571 | 6.42 |
| MC16697-2MSD | 138483 | 8.82 | 201709 | 9.67 | 91044 | 12.93 | 105047 | 15.49 | 28014 | 6.42 |
| ZZZZZZ | 140731 | 8.82 | 208797 | 9.67 | 89823 | 12.93 | 103602 | 15.49 | 28993 | 6.41 |
| ZZZZZZ | 143000 | 8.82 | 212409 | 9.67 | 91263 | 12.93 | 106884 | 15.49 | 28555 | 6.42 |
| ZZZZZZ | 143641 | 8.82 | 213000 | 9.67 | 93492 | 12.93 | 107232 | 15.49 | 28705 | 6.43 |
| MC16798-9 | 148136 | 8.82 | 211966 | 9.67 | 89569 | 12.93 | 106512 | 15.49 | 26783 | 6.41 |
| MC16798-10 | 148261 | 8.82 | 208463 | 9.67 | 87954 | 12.93 | 106218 | 15.49 | 29592 | 6.41 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcobol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1801-CC1800 | Injection Date: | 12/21/12 |
| Lab File ID: | M53043.D | Injection Time: | 11:58 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 181618 | 9.36 | 253844 | 10.24 | 128665 | 13.52 | 146551 | 16.08 | 99307 | 6.86 |
| Upper Limit [a] | 363236 | 9.86 | 507688 | 10.74 | 257330 | 14.02 | 293102 | 16.58 | 198614 | 7.36 |
| Lower Limit [b] | 90809 | 8.86 | 126922 | 9.74 | 64333 | 13.02 | 73276 | 15.58 | 49654 | 6.36 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1801-BS | 181618 | 9.36 | 253844 | 10.24 | 128665 | 13.52 | 146551 | 16.08 | 99307 | 6.86 |
| MSM1801-MB | 194908 | 9.36 | 266632 | 10.24 | 128589 | 13.52 | 151743 | 16.09 | 49991 | 6.86 |
| MC16798-1 | 194294 | 9.36 | 267691 | 10.24 | 129377 | 13.52 | 151188 | 16.09 | 91038 | 6.86 |
| MC16798-3 | 190628 | 9.36 | 261158 | 10.24 | 127423 | 13.52 | 147811 | 16.08 | 80958 | 6.85 |
| MC16798-5 | 185568 | 9.36 | 253135 | 10.24 | 123892 | 13.52 | 143566 | 16.09 | 79703 | 6.85 |
| ZZZZZZ | 187170 | 9.36 | 258983 | 10.24 | 126389 | 13.52 | 150640 | 16.09 | 84223 | 6.85 |
| ZZZZZZ | 196284 | 9.36 | 268861 | 10.24 | 129804 | 13.52 | 157775 | 16.09 | 89360 | 6.86 |
| ZZZZZZ | 194273 | 9.36 | 268581 | 10.24 | 129253 | 13.52 | 156324 | 16.09 | 80746 | 6.86 |
| ZZZZZZ | 183563 | 9.36 | 252072 | 10.24 | 117978 | 13.52 | 122212 | 16.09 | 85614 | 6.85 |
| ZZZZZZ | 192938 | 9.36 | 261549 | 10.24 | 122456 | 13.52 | 128865 | 16.09 | 95380 | 6.86 |
| MC16798-6 | 185650 | 9.36 | 253092 | 10.24 | 122823 | 13.52 | 142623 | 16.08 | 83649 | 6.86 |
| MC16798-7 | 172892 | 9.36 | 233303 | 10.24 | 116066 | 13.52 | 131517 | 16.09 | 76745 | 6.85 |
| MC16798-8 | 176885 | 9.36 | 241780 | 10.24 | 117110 | 13.52 | 137019 | 16.09 | 86646 | 6.86 |
| MC16798-11 | 172805 | 9.36 | 238765 | 10.24 | 117819 | 13.52 | 134295 | 16.09 | 69790 | 6.86 |
| MC16889-1 | 41026[c] | 9.36 | 53912[c] | 10.24 | 26823[c] | 13.52 | 31127[c] | 16.09 | 13531[c] | 6.86 |
| ZZZZZZ | 170809 | 9.36 | 231956 | 10.24 | 111955 | 13.52 | 129024 | 16.08 | 59943 | 6.85 |
| ZZZZZZ | 181721 | 9.36 | 248542 | 10.24 | 122962 | 13.52 | 141525 | 16.08 | 68958 | 6.86 |
| ZZZZZZ | 184822 | 9.36 | 253011 | 10.24 | 124220 | 13.52 | 142639 | 16.08 | 78363 | 6.86 |
| MC16798-2 | 169863 | 9.36 | 233433 | 10.24 | 112955 | 13.52 | 131826 | 16.08 | 68539 | 6.85 |
| MC16889-1MS | 178686 | 9.36 | 244443 | 10.24 | 120161 | 13.52 | 145251 | 16.08 | 76253 | 6.86 |
| MC16889-1MSD | 87005[c] | 9.36 | 118165[c] | 10.24 | 58978[c] | 13.52 | 69356[c] | 16.08 | 33238[c] | 6.86 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by MS/MSD.

# Volatile Surrogate Recovery Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Method: SW846 8260B | Matrix: AQ |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC16798-4 | H59392.D | 101.0 | 99.0 | 106.0 |
| MC16752-3MS | H59405.D | 108.0 | 99.0 | 102.0 |
| MC16752-3MSD | H59406.D | 109.0 | 98.0 | 101.0 |
| MSH1961-BS | H59387.D | 109.0 | 99.0 | 102.0 |
| MSH1961-MB | H59388.D | 100.0 | 101.0 | 105.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC16798-1 | M53046.D | 84.0 | 87.0 | 83.0 |
| MC16798-2 | M53063.D | 82.0 | 87.0 | 83.0 |
| MC16798-3 | M53048.D | 82.0 | 88.0 | 83.0 |
| MC16798-5 | M53049.D | 82.0 | 88.0 | 83.0 |
| MC16798-6 | M53055.D | 82.0 | 88.0 | 84.0 |
| MC16798-7 | M53056.D | 80.0 | 88.0 | 83.0 |
| MC16798-8 | M53057.D | 83.0 | 88.0 | 83.0 |
| MC16798-9 | K65759.D | 94.0 | 96.0 | 110.0 |
| MC16798-10 | K65760.D | 94.0 | 94.0 | 113.0 |
| MC16798-11 | M53058.D | 82.0 | 88.0 | 82.0 |
| MC16697-2MS | K65753.D | 89.0 | 96.0 | 100.0 |
| MC16697-2MSD | K65754.D | 88.0 | 95.0 | 100.0 |
| MC16889-1MS | M53064.D | 85.0 | 88.0 | 80.0 |
| MC16889-1MSD | M53065.D | 83.0 | 88.0 | 82.0 |
| MSK2162-BS | K65737.D | 90.0 | 98.0 | 101.0 |
| MSK2162-MB | K65739.D | 96.0 | 97.0 | 99.0 |
| MSM1801-BS | M53043.D | 85.0 | 89.0 | 82.0 |
| MSM1801-MB | M53045.D | 82.0 | 88.0 | 80.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

New England ACCUTEST LABORATORIES

## GC Volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31406-MB | BK19937.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16798-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.015 | 0.013 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.015 | 0.010 | ug/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 95% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 100% | 36-173% |

# Method Blank Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31434-MB | BK20055.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16798-1, MC16798-2, MC16798-3, MC16798-5, MC16798-6, MC16798-7, MC16798-8, MC16798-9, MC16798-10, MC16798-11

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 2.4 | 1.1 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.4 | 0.94 | ug/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 148% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 150% | 61-167% |

# Blank Spike Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31406-BS | BK19938.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK7I6 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16798-4

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 0.071 | 0.067 | 94 | 60-140 |
| 106-93-4 | 1,2-Dibromoethane | 0.071 | 0.071 | 100 | 60-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 96% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 104% | 36-173% |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31434-BS | BK20056.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16798-1, MC16798-2, MC16798-3, MC16798-5, MC16798-6, MC16798-7, MC16798-8, MC16798-9, MC16798-10, MC16798-11

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 33 | 46.0 | 139 | 59-142 |
| 106-93-4 | 1,2-Dibromoethane | 33 | 43.8 | 133 | 56-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 143% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 142% | 61-167% |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31406-MS | BK19941.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |
| OP31406-MSD | BK19942.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |
| MC16600-6 | BK19943.D | 1 | 12/13/12 | AP | 12/13/12 | OP31406 | GBK716 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16798-4



| CAS No. | Compound | MC16600-6 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 0.071 | 0.066 | 93 | 0.064 | 90 | 3 | 64-141/29 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 0.071 | 0.072 | 101 | 0.067 | 94 | 7 | 63-163/27 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC16600-6 | Limits |
|---|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 100% | 100% | 99% | 36-173% |
| 460-00-4 | Bromoflnorobenzene (S) | 110% | 108% | 107% | 36-173% |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31434-MS | BK20057.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |
| OP31434-MSD | BK20058.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |
| MC16644-1 | BK20059.D | 1 | 12/16/12 | AP | 12/14/12 | OP31434 | GBK720 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16798-1, MC16798-2, MC16798-3, MC16798-5, MC16798-6, MC16798-7, MC16798-8, MC16798-9, MC16798-10, MC16798-11

| CAS No. | Compound | MC16644-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 1 | 116 | 116 | 113 | 115 | 3 | 40-156/27 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 1 | 132 | 132 | 128 | 131 | 2 | 48-141/27 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC16644-1 | Limits |
|---|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 124% | 128% | 166% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 130% | 130% | 156% | 61-167% |

* = Outside of Control Limits.

# Volatile Surrogate Recovery Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8011 Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] | S1 [b] |
|---|---|---|---|
| MC16798-4 | BK19948.D | 102.0 | 116.0 |
| OP31406-BS | BK19938.D | 96.0 | 104.0 |
| OP31406-MB | BK19937.D | 95.0 | 100.0 |
| OP31406-MS | BK19941.D | 100.0 | 110.0 |
| OP31406-MSD | BK19942.D | 100.0 | 108.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Bromofluorobenzene (S) | 36-173% |

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2

# Volatile Surrogate Recovery Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8011 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] | S1 [b] |
|---|---|---|---|
| MC16798-1 | BK20063.D | 142.0 | 131.0 |
| MC16798-2 | BK20064.D | 140.0 | 131.0 |
| MC16798-3 | BK20066.D | 143.0 | 135.0 |
| MC16798-5 | BK20067.D | 139.0 | 138.0 |
| MC16798-6 | BK20068.D | 137.0 | 135.0 |
| MC16798-7 | BK20069.D | 149.0 | 145.0 |
| MC16798-8 | BK20070.D | 148.0 | 146.0 |
| MC16798-9 | BK20071.D | 216.0* [c] | 137.0 |
| MC16798-10 | BK20072.D | 156.0 | 130.0 |
| MC16798-11 | BK20073.D | 134.0 | 130.0 |
| OP31434-BS | BK20056.D | 143.0 | 142.0 |
| OP31434-MB | BK20055.D | 148.0 | 150.0 |
| OP31434-MS | BK20057.D | 124.0 | 130.0 |
| OP31434-MSD | BK20058.D | 128.0 | 130.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Bromofluorobenzene (S) | 61-167% |

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2
(c) Outside control limits due to possible matrix interference.

# GC Surrogate Retention Time Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBK716-ICC716 | Injection Date: | 12/13/12 |
| Lab File ID: | BK19932.D | Injection Time: | 18:03 |
| Instrument ID: | GCBK | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.85 | 4.52 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| ZZZZZZ | BK19935A.D | 12/13/12 | 19:16 | 4.85 | 4.52 |
| ZZZZZZ | BK19935B.D | 12/13/12 | 19:16 | 4.85 | 4.52 |
| OP31406-MB | BK19937.D | 12/13/12 | 20:04 | 4.85 | 4.52 |
| OP31405-MB | BK19937A.D | 12/13/12 | 20:04 | 4.85 | 4.52 |
| OP31406-BS | BK19938.D | 12/13/12 | 20:28 | 4.85 | 4.52 |
| OP31405-BS | BK19938A.D | 12/13/12 | 20:28 | 4.85 | 4.52 |
| OP31405-BSD | BK19939.D | 12/13/12 | 20:52 | 4.85 | 4.52 |
| ZZZZZZ | BK19940.D | 12/13/12 | 21:17 | 4.85 | 4.52 |
| OP31406-MS | BK19941.D | 12/13/12 | 21:41 | 4.85 | 4.52 |
| OP31406-MSD | BK19942.D | 12/13/12 | 22:06 | 4.85 | 4.52 |
| MC16600-6 | BK19943.D | 12/13/12 | 22:30 | 4.85 | 4.52 |
| ZZZZZZ | BK19944.D | 12/13/12 | 22:55 | 4.85 | 4.52 |
| ZZZZZZ | BK19945.D | 12/13/12 | 23:19 | 4.85 | 4.52 |
| ZZZZZZ | BK19946.D | 12/13/12 | 23:43 | 4.85 | 4.52 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

# GC Surrogate Retention Time Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBK716-CC716 | Injection Date: | 12/14/12 |
| Lab File ID: | BK19947.D | Injection Time: | 00:08 |
| Instrument ID: | GCBK | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.85 | 4.52 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| MC16798-4 | BK19948.D | 12/14/12 | 00:32 | 4.85 | 4.52 |
| ZZZZZZ | BK19949.D | 12/14/12 | 00:56 | 4.85 | 4.52 |
| GBK716-ECC716 | BK19953.D | 12/14/12 | 02:34 | 4.85 | 4.52 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

7.5.2

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# GC Surrogate Retention Time Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBK720-ICC720 | Injection Date: | 12/16/12 |
| Lab File ID: | BK20049.D | Injection Time: | 14:38 |
| Instrument ID: | GCBK | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.78 | 4.45 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| OP31434-MB | BK20055.D | 12/16/12 | 17:05 | 4.78 | 4.45 |
| OP31434-BS | BK20056.D | 12/16/12 | 17:29 | 4.78 | 4.45 |
| OP31434-MS | BK20057.D | 12/16/12 | 17:54 | 4.78 | 4.45 |
| OP31434-MSD | BK20058.D | 12/16/12 | 18:19 | 4.78 | 4.45 |
| MC16644-1 | BK20059.D | 12/16/12 | 18:43 | 4.78 | 4.45 |
| ZZZZZZ | BK20060.D | 12/16/12 | 19:08 | 4.78 | 4.45 |
| ZZZZZZ | BK20061.D | 12/16/12 | 19:33 | 4.78 | 4.45 |
| ZZZZZZ | BK20062.D | 12/16/12 | 19:58 | 4.78 | 4.45 |
| MC16798-1 | BK20063.D | 12/16/12 | 20:22 | 4.78 | 4.45 |
| MC16798-2 | BK20064.D | 12/16/12 | 20:47 | 4.78 | 4.45 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

# GC Surrogate Retention Time Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBK720-CC720 | Injection Date: | 12/16/12 |
| Lab File ID: | BK20065.D | Injection Time: | 21:12 |
| Instrument ID: | GCBK | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.78 | 4.45 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | SI [b] RT |
|---|---|---|---|---|---|
| MC16798-3 | BK20066.D | 12/16/12 | 21:36 | 4.78 | 4.45 |
| MC16798-5 | BK20067.D | 12/16/12 | 22:01 | 4.78 | 4.45 |
| MC16798-6 | BK20068.D | 12/16/12 | 22:25 | 4.78 | 4.45 |
| MC16798-7 | BK20069.D | 12/16/12 | 22:50 | 4.78 | 4.45 |
| MC16798-8 | BK20070.D | 12/16/12 | 23:14 | 4.78 | 4.45 |
| MC16798-9 | BK20071.D | 12/16/12 | 23:39 | 4.78 | 4.45 |
| MC16798-10 | BK20072.D | 12/17/12 | 00:03 | 4.78 | 4.45 |
| MC16798-11 | BK20073.D | 12/17/12 | 00:28 | 4.78 | 4.45 |
| GBK720-ECC720 | BK20074.D | 12/17/12 | 00:52 | 4.78 | 4.45 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

New England ACCUTEST LABORATORIES

## General Chemistry

# QC Data Summaries

8

Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Sample: MC16798-1 | Analyzed: 17-DEC-12 by HS | | Method: SM21 2540 B MOD. |
| ClientID: VMP-47-12 | | | |
| Wet Weight (Total) | 25.411 | g | |
| Tare Weight | 19.028 | g | |
| Dry Weight (Total) | 24.973 | g | |
| Solids, Percent | 93.1 | % | |
| Sample: MC16798-2 | Analyzed: 17-DEC-12 by HS | | Method: SM21 2540 B MOD. |
| ClientID: VMP-47-19 | | | |
| Wet Weight (Total) | 25 | g | |
| Tare Weight | 18.527 | g | |
| Dry Weight (Total) | 24.302 | g | |
| Solids, Percent | 89.2 | % | |
| Sample: MC16798-3 | Analyzed: 17-DEC-12 by HS | | Method: SM21 2540 B MOD. |
| ClientID: VMP-47-29 | | | |
| Wet Weight (Total) | 26.799 | g | |
| Tare Weight | 18.672 | g | |
| Dry Weight (Total) | 26.384 | g | |
| Solids, Percent | 94.9 | % | |
| Sample: MC16798-5 | Analyzed: 17-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-48-13 | | | |
| Wet Weight (Total) | 30.665 | g | |
| Tare Weight | 18.268 | g | |
| Dry Weight (Total) | 29.727 | g | |
| Solids, Percent | 92.4 | % | |
| Sample: MC16798-6 | Analyzed: 17-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-48-21 | | | |
| Wet Weight (Total) | 25.18 | g | |
| Tare Weight | 18.841 | g | |
| Dry Weight (Total) | 24.844 | g | |
| Solids, Percent | 94.7 | % | |
| Sample: MC16798-7 | Analyzed: 17-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-48-27 | | | |
| Wet Weight (Total) | 29.568 | g | |
| Tare Weight | 23.081 | g | |
| Dry Weight (Total) | 29.228 | g | |
| Solids, Percent | 94.8 | % | |

# Percent Solids Raw Data Summary



Job Number: MC16798
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Sample: MC16798-8 | Analyzed: 17-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-50-13 | | | |
| Wet Weight (Total) | 27.147 | g | |
| Tare Weight | 21.157 | g | |
| Dry Weight (Total) | 26.319 | g | |
| Solids, Percent | 86.2 | % | |
| Sample: MC16798-9 | Analyzed: 17-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-50-21 | | | |
| Wet Weight (Total) | 32.413 | g | |
| Tare Weight | 26.117 | g | |
| Dry Weight (Total) | 31.428 | g | |
| Solids, Percent | 84.4 | % | |
| Sample: MC16798-10 | Analyzed: 17-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-50-21 DUP | | | |
| Wet Weight (Total) | 29.63 | g | |
| Tare Weight | 21.098 | g | |
| Dry Weight (Total) | 28.802 | g | |
| Solids, Percent | 90.3 | % | |
| Sample: MC16798-11 | Analyzed: 17-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-50-29 | | | |
| Wet Weight (Total) | 36.771 | g | |
| Tare Weight | 28.208 | g | |
| Dry Weight (Total) | 36.435 | g | |
| Solids, Percent | 96.1 | % | |

# Roxana Drilling 2013 Data Review

**Laboratory SDG: MC16889**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 3/1/2013**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| VMP-49-11 | VMP-49-21 |
| VMP-49-31 | VMP-51-14 |
| VMP-51-21 | VMP-51-31 |
| TRIP BLANK | VMP-52-13 |
| VMP-52-25 | VMP-52-25-Dup |
| VMP-52-29 | VMP-53-15 |
| VMP-53-27 | VMP-53-31 |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS/LCSD recoveries were outside evaluation criteria. Surrogate recovery for bromofluorobenzene was outside evaluation criteria in the initial analyses of VOC 8011 samples, VMP-52-13 and VMP-52-25. VOC MS/MSD recoveries and MS/MSD RPDs were outside of evaluation criteria in samples VMP-49-11 and VMP-53-15. Internal standard area recoveries in sample VMP-49-11 were outside criteria. The continuing calibration verification recovery for acrolein exceeded 50 percent difference (%D). Although not indicated in the laboratory case narrative, samples VMP-52-13 and VMP-52-25 were re-analyzed outside holding time criteria for VOCs by 8011. Professional judgment was used to qualify the common lab contaminants methylene chloride and acetone in several samples. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 1.3°C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

No, VOC by 8011 analytes were re-analyzed one (1) day outside the fourteen (14) day holding time criteria for analysis in samples VMP-52-13 and VMP-52-25. Analytical data that required qualification based on analysis completed outside the holding time criteria are summarized in the following table.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| VMP-52-13-Run#2 | VOCs by 8011 | 1,2-Dibromo-3-chloropropane | **R** |
| VMP-52-13-Run#2 | VOCs by 8011 | 1,2-Dibromoethane | **R** |
| VMP-52-25-Run#2 | VOCs by 8011 | 1,2-Dibromo-3-chloropropane | **R** |
| VMP-52-25-Run#2 | VOCs by 8011 | 1,2-Dibromoethane | **R** |

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSM1801-BS | VOCs | Acrolein | **47** | NA | 70-130 |
| MSM1801-BS | VOCs | 2-Hexanone | **131** | NA | 70-130 |
| MSN2685-BS | VOCs | Acrolein | **46** | NA | 70-130 |
| MSN2685-BS | VOCs | Acrylonitrile | **464** | NA | 70-130 |
| MSN2685-BS | VOCs | Dichlorodifluoromethane | **69** | NA | 70-130 |
| MSM1803-BS/BSD | VOCs | Acetone | **67**/74 | 9 | 70-130/25 |
| MSM1803-BS/BSD | VOCs | Acrolein | **63/54** | 15 | 70-130/25 |
| MSM1804-BS/BSD | VOCs | Acrolein | **56/46** | 20 | 70-130/25 |

Analytical data that required qualification based on LCS/LCSD data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. Professional judgment was used to not reject acrolein in samples associated with LCS MSK2162-BS due to acrolein not being spiked. LCS MSN2685-BS was associated with the trip blank. Trip blanks are quality control samples and are not qualified.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| VMP-49-11 | VOCs | Acrolein | **UJ** |
| VMP-49-21 | VOCs | Acrolein | **UJ** |
| VMP-49-31 | VOCs | Acrolein | **UJ** |
| VMP-51-14 | VOCs | Acrolein | **UJ** |
| VMP-51-21 | VOCs | Acetone | **UJ** |
| VMP-51-21 | VOCs | Acrolein | **UJ** |
| VMP-51-31 | VOCs | Acetone | **UJ** |
| VMP-51-31 | VOCs | Acrolein | **UJ** |
| VMP-52-13 | VOCs | Acetone | **UJ** |
| VMP-52-13 | VOCs | Acrolein | **UJ** |
| VMP-52-25 | VOCs | Acetone | **UJ** |
| VMP-52-25 | VOCs | Acrolein | **UJ** |

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| VMP-52-25-Dup | VOCs | Acetone | **UJ** |
| VMP-52-25-Dup | VOCs | Acrolein | **UJ** |
| VMP-52-29 | VOCs | Acetone | **UJ** |
| VMP-52-29 | VOCs | Acrolein | **UJ** |
| VMP-53-15 | VOCs | Acetone | **UJ** |
| VMP-53-15 | VOCs | Acrolein | **UJ** |
| VMP-53-27 | VOCs | Acetone | **UJ** |
| VMP-53-27 | VOCs | Acrolein | **UJ** |
| VMP-53-31 | VOCs | Acrolein | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

No, VOC by 8011 surrogates were not added to the initial run of samples VMP-52-13 and VMP-52-25.

| Sample ID | Parameter | Surrogate | Recovery | Criteria |
|---|---|---|---|---|
| VMP-52-13-Run#1 | VOCs by 8011 | Bromofluorobenzene (S) | **0** | 61-167 |
| VMP-52-13-Run#1 | VOCs by 8011 | Bromofluorobenzene (S) | **0** | 61-167 |
| VMP-52-25-Run#1 | VOCs by 8011 | Bromofluorobenzene (S) | **0** | 61-167 |
| VMP-52-25-Run#1 | VOCs by 8011 | Bromofluorobenzene (S) | **0** | 61-167 |

Confirmation run data was used to compare sample results. No qualification of data based on surrogate recoveries was required.

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, samples VMP-49-11 and VMP-53-15 were spiked and analyzed for VOCs.

*Were MS/MSD recoveries within evaluation criteria?*

No

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/ RPD Criteria |
|---|---|---|---|---|---|
| VMP-49-11 | VOCs | Acetone | 76/**154** | **65** | 70-130/30 |
| VMP-49-11 | VOCs | Acrolein | **20/23** | 12 | 70-130/30 |
| VMP-49-11 | VOCs | Acrylonitrile | **42**/82 | **61** | 70-130/30 |
| VMP-49-11 | VOCs | Benzene | **26/69** | **88** | 70-130/30 |
| VMP-49-11 | VOCs | Bromobenzene | **14/53** | **113** | 70-130/30 |
| VMP-49-11 | VOCs | Bromochloromethane | **38**/73 | **60** | 70-130/30 |
| VMP-49-11 | VOCs | Bromodichloromethane | **29/68** | **77** | 70-130/30 |
| VMP-49-11 | VOCs | Bromoform | **29/65** | **73** | 70-130/30 |
| VMP-49-11 | VOCs | Bromomethane | **41**/87 | **69** | 70-130/30 |
| VMP-49-11 | VOCs | 2-Butanone (MEK) | **42**/88 | **67** | 70-130/30 |
| VMP-49-11 | VOCs | n-Butylbenzene | **5/47** | **160** | 70-130/30 |
| VMP-49-11 | VOCs | sec-Butylbenzene | **5/47** | **158** | 70-130/30 |
| VMP-49-11 | VOCs | tert-Butylbenzene | **5/45** | **155** | 70-130/30 |
| VMP-49-11 | VOCs | Carbon disulfide | **37**/87 | **78** | 70-130/30 |

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/ RPD Criteria |
|---|---|---|---|---|---|
| VMP-49-11 | VOCs | Carbon tetrachloride | **19**/70 | **112** | 70-130/30 |
| VMP-49-11 | VOCs | Chlorobenzene | **16/56** | **106** | 70-130/30 |
| VMP-49-11 | VOCs | Chloroethane | **39**/89 | **76** | 70-130/30 |
| VMP-49-11 | VOCs | 2-Chloroethyl vinyl ether | **0/0** | NA | 70-130/30 |
| VMP-49-11 | VOCs | Chloroform | **31**/70 | **75** | 70-130/30 |
| VMP-49-11 | VOCs | Chloromethane | **44**/94 | **68** | 70-130/30 |
| VMP-49-11 | VOCs | o-Chlorotoluene | **9/46** | **135** | 70-130/30 |
| VMP-49-11 | VOCs | p-Chlorotoluene | **9/47** | **136** | 70-130/30 |
| VMP-49-11 | VOCs | Dibromochloromethane | **30/65** | **72** | 70-130/30 |
| VMP-49-11 | VOCs | 1,2-Dichlorobenzene | **9/45** | **130** | 70-130/30 |
| VMP-49-11 | VOCs | 1,3-Dichlorobenzene | **9/46** | **135** | 70-130/30 |
| VMP-49-11 | VOCs | 1,4-Dichlorobenzene | **9/46** | **133** | 70-130/30 |
| VMP-49-11 | VOCs | Dichlorodifluoromethane | **28**/85 | **97** | 70-130/30 |
| VMP-49-11 | VOCs | 1,1-Dichloroethane | **31**/74 | **78** | 70-130/30 |
| VMP-49-11 | VOCs | 1,2-Dichloroethane | **36**/71 | **63** | 70-130/30 |
| VMP-49-11 | VOCs | 1,1-Dichloroethene | **34**/86 | **85** | 70-130/30 |
| VMP-49-11 | VOCs | cis-1,2-Dichloroethene | **31**/70 | **73** | 70-130/30 |
| VMP-49-11 | VOCs | trans-1,2-Dichloroethene | **33**/78 | **78** | 70-130/30 |
| VMP-49-11 | VOCs | 1,2-Dichloropropane | **26/65** | **81** | 70-130/30 |
| VMP-49-11 | VOCs | 1,3-Dichloropropane | **30/65** | **72** | 70-130/30 |
| VMP-49-11 | VOCs | 2,2-Dichloropropane | **23**/73 | **103** | 70-130/30 |
| VMP-49-11 | VOCs | 1,1-Dichloropropene | **22**/72 | **103** | 70-130/30 |
| VMP-49-11 | VOCs | cis-1,3-Dichloropropene | **27/62** | **77** | 70-130/30 |
| VMP-49-11 | VOCs | trans-1,3-Dichloropropene | **30/67** | **73** | 70-130/30 |
| VMP-49-11 | VOCs | 1,4-Dioxane | **34**/114 | **105** | 70-130/30 |
| VMP-49-11 | VOCs | Ethyl methacrylate | **28**/65 | **77** | 70-130/30 |
| VMP-49-11 | VOCs | Ethylbenzene | **11/55** | **132** | 70-130/30 |
| VMP-49-11 | VOCs | Hexachlorobutadiene | **5/48** | **161** | 70-130/30 |
| VMP-49-11 | VOCs | 2-Hexanone | **35**/79 | **73** | 70-130/30 |
| VMP-49-11 | VOCs | Isopropylbenzene | **7/46** | **147** | 70-130/30 |
| VMP-49-11 | VOCs | p-Isopropyltoluene | **5/50** | **159** | 70-130/30 |
| VMP-49-11 | VOCs | Methyl tert butyl ether | **29/58** | **62** | 70-130/30 |
| VMP-49-11 | VOCs | 4-Methyl-2-pentanone (MIBK) | **37**/80 | **70** | 70-130/30 |
| VMP-49-11 | VOCs | Methylene bromide | **37**/73 | **62** | 70-130/30 |
| VMP-49-11 | VOCs | Methylene chloride | **36**/71 | **63** | 70-130/30 |
| VMP-49-11 | VOCs | Naphthalene | **-24/2** | **127** | 70-130/30 |
| VMP-49-11 | VOCs | n-Propylbenzene | **6/47** | **150** | 70-130/30 |
| VMP-49-11 | VOCs | Styrene | **0/6** | **200** | 70-130/30 |
| VMP-49-11 | VOCs | 1,1,1,2-Tetrachloroethane | **18/59** | **104** | 70-130/30 |
| VMP-49-11 | VOCs | 1,1,2,2-Tetrachloroethane | **28/68** | **80** | 70-130/30 |
| VMP-49-11 | VOCs | Tetrachloroethene | **13/61** | **130** | 70-130/30 |
| VMP-49-11 | VOCs | Toluene | **17/63** | **106** | 70-130/30 |
| VMP-49-11 | VOCs | 1,2,3-Trichlorobenzene | **6/39** | **145** | 70-130/30 |
| VMP-49-11 | VOCs | 1,2,4-Trichlorobenzene | **6/38** | **144** | 70-130/30 |
| VMP-49-11 | VOCs | 1,1,1-Trichloroethane | **22**/71 | **102** | 70-130/30 |
| VMP-49-11 | VOCs | 1,1,2-Trichloroethane | **31/67** | **71** | 70-130/30 |
| VMP-49-11 | VOCs | Trichloroethene | **23/68** | **95** | 70-130/30 |
| VMP-49-11 | VOCs | Trichlorofluoromethane | **27**/83 | **100** | 70-130/30 |
| VMP-49-11 | VOCs | 1,2,3-Trichloropropane | **28/68** | **79** | 70-130/30 |

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/ RPD Criteria |
|---|---|---|---|---|---|
| VMP-49-11 | VOCs | 1,2,4-Trimethylbenzene | **5/43** | **156** | 70-130/30 |
| VMP-49-11 | VOCs | 1,3,5-Trimethylbenzene | **8/51** | **146** | 70-130/30 |
| VMP-49-11 | VOCs | Vinyl acetate | **13/33** | **85** | 70-130/30 |
| VMP-49-11 | VOCs | Vinyl chloride | **40**/84 | **69** | 70-130/30 |
| VMP-49-11 | VOCs | m,p-Xylene | **9/51** | **131** | 70-130/30 |
| VMP-49-11 | VOCs | o-Xylene | **11/51** | **128** | 70-130/30 |
| VMP-49-11 | VOCs | Xylene (total) | **9/51** | **130** | 70-130/30 |
| VMP-53-15 | VOCs | Acetone | **22/-6** | 9 | 70-130/30 |
| VMP-53-15 | VOCs | Acrolein | **27/34** | 23 | 70-130/30 |
| VMP-53-15 | VOCs | Acrylonitrile | **51/54** | 5 | 70-130/30 |
| VMP-53-15 | VOCs | Benzene | **26/34** | 24 | 70-130/30 |
| VMP-53-15 | VOCs | Bromobenzene | **12/30** | **87** | 70-130/30 |
| VMP-53-15 | VOCs | Bromochloromethane | **40/47** | 16 | 70-130/30 |
| VMP-53-15 | VOCs | Bromodichloromethane | **31/38** | 21 | 70-130/30 |
| VMP-53-15 | VOCs | Bromoform | **30/42** | **32** | 70-130/30 |
| VMP-53-15 | VOCs | Bromomethane | **44/48** | 10 | 70-130/30 |
| VMP-53-15 | VOCs | 2-Butanone (MEK) | 77/**28** | **94** | 70-130/30 |
| VMP-53-15 | VOCs | n-Butylbenzene | **2/49** | **184** | 70-130/30 |
| VMP-53-15 | VOCs | sec-Butylbenzene | **2/47** | **182** | 70-130/30 |
| VMP-53-15 | VOCs | tert-Butylbenzene | **2/44** | **179** | 70-130/30 |
| VMP-53-15 | VOCs | Carbon disulfide | **33/40** | 20 | 70-130/30 |
| VMP-53-15 | VOCs | Carbon tetrachloride | **15/41** | **90** | 70-130/30 |
| VMP-53-15 | VOCs | Chlorobenzene | **16/30** | **62** | 70-130/30 |
| VMP-53-15 | VOCs | Chloroethane | **37/45** | 18 | 70-130/30 |
| VMP-53-15 | VOCs | 2-Chloroethyl vinyl ether | **0/0** | NA | 70-130/30 |
| VMP-53-15 | VOCs | Chloroform | **31/38** | 20 | 70-130/30 |
| VMP-53-15 | VOCs | Chloromethane | **44/53** | 17 | 70-130/30 |
| VMP-53-15 | VOCs | o-Chlorotoluene | **5/32** | **145** | 70-130/30 |
| VMP-53-15 | VOCs | p-Chlorotoluene | **6/33** | **143** | 70-130/30 |
| VMP-53-15 | VOCs | Dibromochloromethane | **31/40** | 25 | 70-130/30 |
| VMP-53-15 | VOCs | 1,2-Dichlorobenzene | **6/31** | **139** | 70-130/30 |
| VMP-53-15 | VOCs | 1,3-Dichlorobenzene | **5/33** | **148** | 70-130/30 |
| VMP-53-15 | VOCs | 1,4-Dichlorobenzene | **6/35** | **143** | 70-130/30 |
| VMP-53-15 | VOCs | Dichlorodifluoromethane | **5/57** | **169** | 70-130/30 |
| VMP-53-15 | VOCs | 1,1-Dichloroethane | **31/39** | 22 | 70-130/30 |
| VMP-53-15 | VOCs | 1,2-Dichloroethane | **38/45** | 16 | 70-130/30 |
| VMP-53-15 | VOCs | 1,1-Dichloroethene | **28/41** | **38** | 70-130/30 |
| VMP-53-15 | VOCs | cis-1,2-Dichloroethene | **33/39** | 14 | 70-130/30 |
| VMP-53-15 | VOCs | trans-1,2-Dichloroethene | **32/37** | 13 | 70-130/30 |
| VMP-53-15 | VOCs | 1,2-Dichloropropane | **27/35** | 26 | 70-130/30 |
| VMP-53-15 | VOCs | 1,3-Dichloropropane | **31/40** | 24 | 70-130/30 |
| VMP-53-15 | VOCs | 2,2-Dichloropropane | **21/35** | **48** | 70-130/30 |
| VMP-53-15 | VOCs | 1,1-Dichloropropene | **18/36** | **68** | 70-130/30 |
| VMP-53-15 | VOCs | cis-1,3-Dichloropropene | **28/34** | 21 | 70-130/30 |
| VMP-53-15 | VOCs | trans-1,3-Dichloropropene | **31/39** | 21 | 70-130/30 |
| VMP-53-15 | VOCs | 1,4-Dioxane | **39/56** | **35** | 70-130/30 |
| VMP-53-15 | VOCs | Ethyl methacrylate | **25/33** | 28 | 70-130/30 |
| VMP-53-15 | VOCs | Ethylbenzene | **7/34** | **112** | 70-130/30 |
| VMP-53-15 | VOCs | Hexachlorobutadiene | **2/47** | **185** | 70-130/30 |
| VMP-53-15 | VOCs | 2-Hexanone | **38/32** | 19 | 70-130/30 |

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/ RPD Criteria |
|---|---|---|---|---|---|
| VMP-53-15 | VOCs | Isopropylbenzene | **3/40** | **168** | 70-130/30 |
| VMP-53-15 | VOCs | p-Isopropyltoluene | **2/51** | **182** | 70-130/30 |
| VMP-53-15 | VOCs | Methyl tert butyl ether | **28/34** | 18 | 70-130/30 |
| VMP-53-15 | VOCs | 4-Methyl-2-pentanone (MIBK) | **33/42** | 24 | 70-130/30 |
| VMP-53-15 | VOCs | Methylene bromide | **41/49** | 18 | 70-130/30 |
| VMP-53-15 | VOCs | Methylene chloride | **37/44** | 17 | 70-130/30 |
| VMP-53-15 | VOCs | Naphthalene | **5/43** | **156** | 70-130/30 |
| VMP-53-15 | VOCs | n-Propylbenzene | **3/42** | **171** | 70-130/30 |
| VMP-53-15 | VOCs | Styrene | **3/17** | **134** | 70-130/30 |
| VMP-53-15 | VOCs | 1,1,1,2-Tetrachloroethane | **17/33** | **64** | 70-130/30 |
| VMP-53-15 | VOCs | 1,1,2,2-Tetrachloroethane | **27/40** | **39** | 70-130/30 |
| VMP-53-15 | VOCs | Tetrachloroethene | **9/39** | **127** | 70-130/30 |
| VMP-53-15 | VOCs | Toluene | **15/31** | **54** | 70-130/30 |
| VMP-53-15 | VOCs | 1,2,3-Trichlorobenzene | **3/48** | **178** | 70-130/30 |
| VMP-53-15 | VOCs | 1,2,4-Trichlorobenzene | **2/50** | **182** | 70-130/30 |
| VMP-53-15 | VOCs | 1,1,1-Trichloroethane | **20/38** | **62** | 70-130/30 |
| VMP-53-15 | VOCs | 1,1,2-Trichloroethane | **31/41** | 27 | 70-130/30 |
| VMP-53-15 | VOCs | Trichloroethene | **21/32** | **41** | 70-130/30 |
| VMP-53-15 | VOCs | Trichlorofluoromethane | **15/54** | **114** | 70-130/30 |
| VMP-53-15 | VOCs | 1,2,3-Trichloropropane | **28/41** | **36** | 70-130/30 |
| VMP-53-15 | VOCs | 1,2,4-Trimethylbenzene | **3/40** | **170** | 70-130/30 |
| VMP-53-15 | VOCs | 1,3,5-Trimethylbenzene | **8/46** | **139** | 70-130/30 |
| VMP-53-15 | VOCs | Vinyl acetate | **26/39** | **38** | 70-130/30 |
| VMP-53-15 | VOCs | Vinyl chloride | **33/44** | **28** | 70-130/30 |
| VMP-53-15 | VOCs | m,p-Xylene | **8/36** | **129** | 70-130/30 |
| VMP-53-15 | VOCs | o-Xylene | **8/32** | **120** | 70-130/30 |
| VMP-53-15 | VOCs | Xylene (total) | **7/34** | **126** | 70-130/30 |

USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone and LCS recoveries were within evaluation criteria with the exception of compounds listed and qualified as appropriate in Section 5.0 of this data review. No further qualification of the data was required.

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

No

| Sample ID | Parameter | Analyte | IS Area Recovery | IS Criteria |
|---|---|---|---|---|
| VMP-49-11 Run#1 | VOCs | Pentafluorobenzene | **41026** | 90809-363236 |
| VMP-49-11 Run#1 | VOCs | 1,4-Difluorobenzene | **53912** | 126922-507688 |
| VMP-49-11 Run#1 | VOCs | Chlorobenzene-$d_5$ | **26823** | 64333-257330 |
| VMP-49-11 Run#1 | VOCs | 1,4-Dichlorobenzene-$d_4$ | **31127** | 73276-293102 |
| VMP-49-11 Run#1 | VOCs | Tert butyl alcohol-$d_9$ | **13531** | 49654-198614 |
| MC16889-1MSD | VOCs | Pentafluorobenzene | **87005** | 90809-363236 |
| MC16889-1MSD | VOCs | 1,4-Difluorobenzene | **118165** | 126922-507688 |
| MC16889-1MSD | VOCs | Chlorobenzene-$d_5$ | **58978** | 64333-257330 |

| Sample ID | Parameter | Analyte | IS Area Recovery | IS Criteria |
|---|---|---|---|---|
| MC16889-1MSD | VOCs | 1,4-Dichlorobenzene-$d_4$ | **69356** | 73276-293102 |
| MC16889-1MSD | VOCs | Tert butyl alcohol-$d_9$ | **33238** | 49654-198614 |
| MSM1803-BS | VOCs | Tert butyl alcohol-$d_9$ | **88412** | 21318-85272 |
| MSM1803-BSD | VOCs | Tert butyl alcohol-$d_9$ | **97287** | 21318-85272 |
| VMP-49-11 Run#2 | VOCs | Pentafluorobenzene | **46055** | 91973-367892 |
| VMP-49-11 Run#2 | VOCs | 1,4-Difluorobenzene | **61913** | 127145-508578 |
| VMP-49-11 Run#2 | VOCs | Chlorobenzene-$d_5$ | **30642** | 63153-252610 |
| VMP-49-11 Run#2 | VOCs | 1,4-Dichlorobenzene-$d_4$ | **37472** | 71109-284434 |
| VMP-49-11 Run#2 | VOCs | Tert butyl alcohol-$d_9$ | **11790** | 21318-85272 |
| MSM1804-BS | VOCs | Tert butyl alcohol-$d_9$ | **86522** | 20994-83974 |

Analytical data that required qualification based on internal standard data are included in the following table. LCS/LCSD MSM1803-BS/BSD and LCS MSM1804-BS and matrix spike duplicate MC16889-1MSD are quality control samples and are not qualified.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| VMP-49-11 | VOCs | All non-detects | **UJ** |
| VMP-49-11 | VOCs | Naphthalene | **J** |
| VMP-49-11 | VOCs | Toluene | **J** |
| VMP-49-11 | VOCs | m,p-Xylene | **J** |
| VMP-49-11 | VOCs | Xylene (total) | **J** |

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

Yes

| Field ID | Field Duplicate ID |
|---|---|
| VMP-52-25 | VMP-52-25-Dup |

*Were field duplicates within evaluation criteria?*

Yes

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

Yes, professional judgment was used to qualify the common laboratory contaminant methylene chloride reported at concentrations less than two times (2X) the reporting limit (RL).

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| VMP-51-21 | Methylene chloride | - | **U** | Professional Judgment |
| VMP-51-31 | Methylene chloride | - | **U** | Professional Judgment |
| VMP-52-13 | Methylene chloride | - | **U** | Professional Judgment |
| VMP-52-25 | Methylene chloride | - | **U** | Professional Judgment |
| VMP-52-25-Dup | Methylene chloride | - | **U** | Professional Judgment |
| VMP-52-29 | Methylene chloride | - | **U** | Professional Judgment |

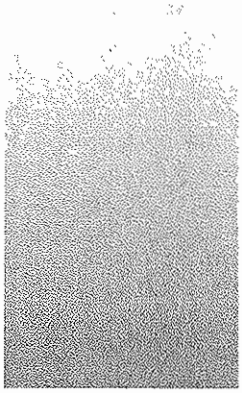
Professional judgment was also used to qualify the common laboratory contaminant acetone reported at concentrations more than two times (2X) the reporting limit (RL).

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| VMP-53-15 | Acetone | 0.158 mg/kg | **U** | Professional Judgment |
| VMP-53-27 | Acetone | 0.0773 mg/kg | **U** | Professional Judgment |

Additionally, several samples were associated with the continuing calibration verification recovery for acrolein that exceeded 50 percent difference (%D). Acrolein was previously qualified in samples VMP-49-21, VMP-49-31, and VMP-51-14 due to LCS/LCSD data in Section 5.0 of this review. No additional qualification of data was required.

New England ACCUTEST LABORATORIES

01/02/13





## Technical Report for

Shell Oil

URSMOSTL: Roxana Drilling, Roxana, IL

21562850.15000

Accutest Job Number: MC16889

Sampling Dates: 12/12/12 - 12/13/12

Report to:

URS Corporation

elizabeth.kunkel@URS.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **140**

Reviewed on 3/1/2013

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Reza Tand
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) ISO 17025:2005 (L2235)

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# Sample Summary

Shell Oil

Job No: MC16889

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562850.15000

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| MC16889-1 | 12/12/12 | 10:35 | WPJS | 12/14/12 | SO | Soil | VMP-49-11 |
| MC16889-1D | 12/12/12 | 10:35 | WPJS | 12/14/12 | SO | Soil Dup/MSD | VMP-49-11 |
| MC16889-1S | 12/12/12 | 10:35 | WPJS | 12/14/12 | SO | Soil Matrix Spike | VMP-49-11 |
| MC16889-2 | 12/12/12 | 10:40 | WPJS | 12/14/12 | SO | Soil | VMP-49-21 |
| MC16889-3 | 12/12/12 | 10:45 | WPJS | 12/14/12 | SO | Soil | VMP-49-31 |
| MC16889-4 | 12/12/12 | 13:15 | WPJS | 12/14/12 | SO | Soil | VMP-51-14 |
| MC16889-5 | 12/12/12 | 13:25 | WPJS | 12/14/12 | SO | Soil | VMP-51-21 |
| MC16889-6 | 12/12/12 | 13:30 | WPJS | 12/14/12 | SO | Soil | VMP-51-31 |
| MC16889-7 | 12/12/12 | 00:00 | WPJS | 12/14/12 | AQ | Trip Blank Water | TRIP BLANK |
| MC16889-8 | 12/13/12 | 10:15 | WPJS | 12/14/12 | SO | Soil | VMP-52-13 |
| MC16889-9 | 12/13/12 | 10:20 | WPJS | 12/14/12 | SO | Soil | VMP-52-25 |
| MC16889-10 | 12/13/12 | 10:20 | WPJS | 12/14/12 | SO | Soil | VMP-52-25 DUP |
| MC16889-11 | 12/13/12 | 10:25 | WPJS | 12/14/12 | SO | Soil | VMP-52-29 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# Sample Summary
(continued)

Shell Oil

Job No: MC16889

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562850.15000

| Sample Number | Collected Date | Time By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|
| MC16889-12 | 12/13/12 | 13:25 WPJS | 12/14/12 | SO | Soil | VMP-53-15 |
| MC16889-12D | 12/13/12 | 13:25 WPJS | 12/14/12 | SO | Soil Dup/MSD | VMP-53-15 |
| MC16889-12S | 12/13/12 | 13:25 WPJS | 12/14/12 | SO | Soil Matrix Spike | VMP-53-15 |
| MC16889-13 | 12/13/12 | 13:40 WPJS | 12/14/12 | SO | Soil | VMP-53-27 |
| MC16889-14 | 12/13/12 | 13:45 WPJS | 12/14/12 | SO | Soil | VMP-53-31 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

ACCUTEST LABORATORIES

2

# SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Shell Oil **Job No** MC16889

**Site:** URSMOSTL: Roxana Drilling, Roxana, IL **Report Date** 1/2/2013 12:31:29 PM

13 Sample(s), 1 Trip Blank were collected on between 12/12/2012 and 12/13/2012 and were received at Accutest on 12/14/2012 properly preserved, at 1.3 Deg. C and intact. These Samples received an Accutest job number of MC16889. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. 1-Chlorohexane was searched in the library search and reported only if detections were found.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSN2685

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16880-6MS, MC16880-6MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Calibration check standard MSN2685-CC2675 for acrolein exceeds 50% Difference. Acrolein is considered a difficult method analyte
- Blank Spike Recovery(s) for Acrolein, Dichlorodifluoromethane are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Acrolein, Dichlorodifluoromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSN2685-BS for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.
- MC16880-6MS/MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

**Matrix** SO **Batch ID:** MSM1801

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16889-1MS, MC16889-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Calibration check standard MSM1801-CC1800 for acrolein exceeds 50% Difference. Acrolein is considered a difficult method analyte
- Blank Spike Recovery(s) for 2-Hexanone, Acrolein are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,1-Dichloropropene, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,2-Dichloroethane, 1,2-Dichloropropane, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,3-Dichloropropane, 1,4-Dichlorobenzene, 1,4-Dioxane, 2,2-Dichloropropane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acrolein, Acrylonitrile, Benzene, Bromobenzene, Bromochloromethane, Bromodichloromethane, Bromoform, Bromomethane, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroethane, Chloroform, Chloromethane, cis-1,2-Dichloroethene, cis-1,3-Dichloropropene, Dibromochloromethane, Dichlorodifluoromethane, Ethyl methacrylate, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, m,p-Xylene, Methyl Tert Butyl Ether, Methylene bromide, Methylene chloride, n-Butylbenzene, n-Propylbenzene, Naphthalene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, p-Isopropyltoluene, sec-Butylbenzene, Styrene, tert-Butylbenzene, Tetrachloroethene, Toluene, trans-1,2-Dichloroethene, trans-1,3-Dichloropropene, Trichloroethene, Trichlorofluoromethane, Vinyl Acetate, Vinyl chloride, Xylene (total) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

## Volatiles by GCMS By Method SW846 8260B

| Matrix SO | Batch ID: MSM1801 |
|---|---|

- Matrix Spike Duplicate Recovery(s) for 2-Chloroethyl vinyl ether, Acrolein, 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,2-Dichloropropane, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,3-Dichloropropane, 1,4-Dichlorobenzene, Acetone, Benzene, Bromobenzene, Bromodichloromethane, Bromoform, Chlorobenzene, cis-1,3-Dichloropropene, Dibromochloromethane, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, m,p-Xylene, Methyl Tert Butyl Ether, n-Butylbenzene, n-Propylbenzene, Naphthalene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, p-Isopropyltoluene, sec-Butylbenzene, Styrene, tert-Butylbenzene, Tetrachloroethene, Toluene, trans-1,3-Dichloropropene, Trichloroethene, Vinyl Acetate, Xylene (total) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,1-Dichloropropene, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,2-Dichloroethane, 1,2-Dichloropropane, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,3-Dichloropropane, 1,4-Dichlorobenzene, 1,4-Dioxane, 2,2-Dichloropropane, 2-Butanone (MEK), 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acetone, Acrylonitrile, Benzene, Bromobenzene, Bromochloromethane, Bromodichloromethane, Bromoform, Bromomethane, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroethane, Chloroform, Chloromethane, cis-1,2-Dichloroethene, cis-1,3-Dichloropropene, Dibromochloromethane, Dichlorodifluoromethane, Ethyl methacrylate, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, m,p-Xylene, Methyl Tert Butyl Ether, Methylene bromide, Methylene chloride, n-Butylbenzene, n-Propylbenzene, Naphthalene, o-Chlorotoluene, o-Xylene, p-Chlorotolnene, p-Isopropyltoluene, sec-Butylbenzene, Styrene, tert-Butylbenzene, Tetrachloroethene, Toluene, trans-1,2-Dichloroethene, trans-1,3-Dichloropropene, Trichloroethene, Trichlorofluoromethane, Vinyl Acetate, Vinyl chloride, Xylene (total) are outside control limits for sample MC16889-1MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- MC16889-1, MC16889-1MSD has internal standard outside control limits. Outside control limits due to possible matrix interference. Confirmed by MS/MSD.

| Matrix SO | Batch ID: MSM1803 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC16889-12MS, MC16889-12MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Acetone, Acrolein are outside control limits. Blank Spike meets program technical requirements.
- BSD Recovery(s) for Acrolein are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Acetone are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- Matrix Spike Duplicate Recovery(s) for 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,2-Dichloroethane, 1,2-Dichloropropane, 1,3-Dichloropropane, 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acetone, Acrolein, Acrylonitrile, Benzene, Bromochloromethane, Bromodichloromethane, Bromomethane, Carbon disulfide, Chloroethane, Chloroform, Chloromethane, cis-1,2-Dichloroethene, cis-1,3-Dichloropropene, Dibromochloromethane, Ethyl methacrylate, Methyl Tert Butyl Ether, Methylene bromide, Methylene chloride, trans-1,2-Dichloroethene, trans-1,3-Dichloropropene, Vinyl chloride, 1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1-Dichloroethene, 1,1-Dichloropropene, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,4-Dioxane, 2,2-Dichloropropane, 2-Butanone (MEK), Bromobenzene, Bromoform, Carbon tetrachloride, Chlorobenzene, Dichlorodifluoromethane, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, m,p-Xylene, n-Butylbenzene, n-Propylbenzene, Naphthalene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, p-Isopropyltoluene, sec-Butylbenzene, Styrene, tert-Butylbenzene, Tetrachloroethene, Toluene, Trichloroethene, Trichlorofluoromethane, Vinyl Acetate, Xylene (total) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1-Dichloroethene, 1,1-Dichloropropene, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,4-Dioxane, 2,2-Dichloropropane, 2-Butanone (MEK), Bromobenzene, Bromoform, Carbon tetrachloride, Chlorobenzene, Dichlorodifluoromethane, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, m,p-Xylene, n-Butylbenzene, n-Propylbenzene, Naphthalene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, p-Isopropyltoluene, sec-Butylbenzene, Styrene, tert-Butylbenzene, Tetrachloroethene, Toluene, Trichloroethene, Trichlorofluoromethane, Vinyl Acetate, Xylene (total) are outside control limits for sample MC16889-12MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- MC16889-1: Confirmation run.

## Volatiles by GCMS By Method SW846 8260B

| Matrix SO | Batch ID: MSM1803 |
|---|---|

- Matrix Spike Recovery(s) for 1,1,1,2-Tetrachloroethane, 1,1,1-Trichloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,1-Dichloropropene, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,2-Dichloroethane, 1,2-Dichloropropane, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,3-Dichloropropane, 1,4-Dichlorobenzene, 1,4-Dioxane, 2,2-Dichloropropane, 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acrolein, Acrylonitrile, Benzene, Bromobenzene, Bromochloromethane, Bromodichloromethane, Bromoform, Bromomethane, Carbon disulfide, Carbon tetrachloride, Chlorobenzene, Chloroethane, Chloroform, Chloromethane, cis-1,2-Dichloroethene, cis-1,3-Dichloropropene, Dibromochloromethane, Dichlorodifluoromethane, Ethyl methacrylate, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, m,p-Xylene, Methyl Tert Butyl Ether, Methylene bromide, Methylene chloride, n-Butylbenzene, n-Propylbenzene, Naphthalene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, p-Isopropyltoluene, sec-Butylbenzene, Styrene, tert-Butylbenzene, Tetrachloroethene, Toluene, trans-1,2-Dichloroethene, trans-1,3-Dichloropropene, Trichloroethene, Trichlorofluoromethane, Vinyl Acetate, Vinyl chloride, Xylene (total) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSM1803-BS/BSD for Tert Butyl Alcohol-D9: Outside control limits. Target analytes not associated with this internal standard.
- MC16889-1 has internal standard outside control limits. Outside control limits due to possible matrix interference. Confirmed by reanalysis.

| Matrix SO | Batch ID: MSM1804 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC16931-1MS, MC16931-1MSD were used as the QC samples indicated.
- BS/BSD Recovery(s) for Acrolein are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Acrolein, Dichlorodifluoromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

## Volatiles by GC By Method SW846 8011

| Matrix AQ | Batch ID: OP31513 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC17000-5MS, MC17000-5MSD were used as the QC samples indicated.

| Matrix SO | Batch ID: OP31480 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC16889-12MS, MC16889-12MSD, MC16889-1MS, MC16889-1MSD were used as the QC samples indicated.
- MC16889-8,9: Surrogate standard not added. Results confirmed by re-extraction/reanalysis.

| Matrix SO | Batch ID: OP31493 |
|---|---|

- MC16889-8,9: Confirmation run.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN41318 |
|---|---|

- Sample(s) MC16889-1DUP were used as the QC samples for Solids, Percent.

| Matrix SO | Batch ID: GN41319 |
|---|---|

- Sample(s) MC16889-12DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC16889).

# Summary of Hits



Job Number: MC16889
Account: Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Collected: 12/12/12 thru 12/13/12

| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| MC16889-1 | VMP-49-11 | | | | | |
| Naphthalene | | 0.0165 | 0.0067 | 0.0017 | mg/kg | SW846 8260B |
| Toluene | | 0.0013 J | 0.0067 | 0.0011 | mg/kg | SW846 8260B |
| m,p-Xylene | | 0.0023 J | 0.0027 | 0.0011 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0023 J | 0.0027 | 0.00032 | mg/kg | SW846 8260B |
| MC16889-2 | VMP-49-21 | | | | | |
| Benzene | | 0.0020 | 0.00095 | 0.00056 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0062 | 0.0038 | 0.00046 | mg/kg | SW846 8260B |
| Toluene | | 0.0059 J | 0.0095 | 0.0016 | mg/kg | SW846 8260B |
| m,p-Xylene | | 0.0015 J | 0.0038 | 0.0015 | mg/kg | SW846 8260B |
| o-Xylene | | 0.00059 J | 0.0038 | 0.00045 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0021 J | 0.0038 | 0.00045 | mg/kg | SW846 8260B |
| MC16889-3 | VMP-49-31 | | | | | |
| Benzene | | 0.0023 | 0.00053 | 0.00031 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0065 | 0.0021 | 0.00026 | mg/kg | SW846 8260B |
| Isopropylbenzene | | 0.00078 J | 0.0053 | 0.00024 | mg/kg | SW846 8260B |
| Toluene | | 0.0053 | 0.0053 | 0.00090 | mg/kg | SW846 8260B |
| m,p-Xylene | | 0.0017 J | 0.0021 | 0.00084 | mg/kg | SW846 8260B |
| o-Xylene | | 0.00072 J | 0.0021 | 0.00025 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0024 | 0.0021 | 0.00025 | mg/kg | SW846 8260B |
| MC16889-4 | VMP-51-14 | | | | | |
| Benzene | | 0.00065 | 0.00056 | 0.00033 | mg/kg | SW846 8260B |
| 1,3-Dichloropropane | | 0.0012 J | 0.0056 | 0.00026 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0017 J | 0.0023 | 0.00027 | mg/kg | SW846 8260B |
| Toluene | | 0.0021 J | 0.0056 | 0.00096 | mg/kg | SW846 8260B |
| MC16889-5 | VMP-51-21 | | | | | |
| Benzene | | 0.00086 | 0.00052 | 0.00031 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0021 | 0.0021 | 0.00025 | mg/kg | SW846 8260B |
| Methylene chloride | | 0.0012 J | 0.0021 | 0.0012 | mg/kg | SW846 8260B |
| Toluene | | 0.0026 J | 0.0052 | 0.00088 | mg/kg | SW846 8260B |
| o-Xylene | | 0.00036 J | 0.0021 | 0.00025 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0011 J | 0.0021 | 0.00025 | mg/kg | SW846 8260B |
| MC16889-6 | VMP-51-31 | | | | | |
| Benzene | | 0.00084 | 0.00054 | 0.00032 | mg/kg | SW846 8260B |

# Summary of Hits

Job Number: MC16889
Account: Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Collected: 12/12/12 thru 12/13/12

| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| Ethylbenzene | | 0.0022 | 0.0022 | 0.00026 | mg/kg | SW846 8260B |
| Methylene chloride | | 0.0013 J | 0.0022 | 0.0013 | mg/kg | SW846 8260B |
| Toluene | | 0.0028 J | 0.0054 | 0.00092 | mg/kg | SW846 8260B |
| o-Xylene | | 0.00032 J | 0.0022 | 0.00026 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0011 J | 0.0022 | 0.00026 | mg/kg | SW846 8260B |
| MC16889-7 | TRIP BLANK | | | | | |
| No hits reported in this sample. | | | | | | |
| MC16889-8 | VMP-52-13 | | | | | |
| Methylene chloride | | 0.0013 J | 0.0022 | 0.0013 | mg/kg | SW846 8260B |
| MC16889-9 | VMP-52-25 | | | | | |
| Methylene chloride | | 0.0016 J | 0.0022 | 0.0013 | mg/kg | SW846 8260B |
| MC16889-10 | VMP-52-25 DUP | | | | | |
| Methylene chloride | | 0.0014 J | 0.0021 | 0.0012 | mg/kg | SW846 8260B |
| MC16889-11 | VMP-52-29 | | | | | |
| Methylene chloride | | 0.0013 J | 0.0021 | 0.0012 | mg/kg | SW846 8260B |
| MC16889-12 | VMP-53-15 | | | | | |
| Acetone | | 0.158 | 0.0054 | 0.0014 | mg/kg | SW846 8260B |
| Benzene | | 0.0014 | 0.00054 | 0.00032 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0022 | 0.0021 | 0.00026 | mg/kg | SW846 8260B |
| Toluene | | 0.0033 J | 0.0054 | 0.00091 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.00063 J | 0.0021 | 0.00026 | mg/kg | SW846 8260B |
| MC16889-13 | VMP-53-27 | | | | | |
| Acetone | | 0.0773 | 0.0052 | 0.0013 | mg/kg | SW846 8260B |
| Benzene | | 0.00070 | 0.00052 | 0.00031 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0018 J | 0.0021 | 0.00025 | mg/kg | SW846 8260B |
| Toluene | | 0.0020 J | 0.0052 | 0.00089 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.00046 J | 0.0021 | 0.00025 | mg/kg | SW846 8260B |
| MC16889-14 | VMP-53-31 | | | | | |
| Benzene | | 0.0012 | 0.00051 | 0.00030 | mg/kg | SW846 8260B |

# Summary of Hits

Job Number: MC16889
Account: Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Collected: 12/12/12 thru 12/13/12

| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| Ethylbenzene | | 0.0019 J | 0.0020 | 0.00025 | mg/kg | SW846 8260B |
| Toluene | | 0.0027 J | 0.0051 | 0.00087 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.00071 J | 0.0020 | 0.00024 | mg/kg | SW846 8260B |

New England ACCUTEST LABORATORIES

4

## Sample Results

## Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-49-11 | | |
| Lab Sample ID: | MC16889-1 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 87.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53059.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| Run #2 [a] | M53096.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.30 g | 5.0 ml |
| Run #2 | 5.90 g | 5.0 ml |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0067 | 0.0017 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 0.033 | 0.013 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 0.033 | 0.0017 | mg/kg | UJ |
| 71-43-2 | Benzene | ND | 0.00067 | 0.00039 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0067 | 0.00030 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0067 | 0.00050 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0027 | 0.00028 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0027 | 0.0027 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0027 | 0.00069 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0067 | 0.0017 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0067 | 0.00025 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0067 | 0.00031 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0067 | 0.0012 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0067 | 0.00022 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0027 | 0.00097 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0027 | 0.00037 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0067 | 0.0017 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0067 | 0.0027 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0027 | 0.00069 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0067 | 0.00062 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0067 | 0.0015 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0067 | 0.00030 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0027 | 0.00039 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0027 | 0.00029 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0027 | 0.00030 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0027 | 0.00028 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0027 | 0.0015 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0027 | 0.00036 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0027 | 0.00038 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0027 | 0.00049 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0027 | 0.00040 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0027 | 0.00038 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-49-11 | | |
| Lab Sample ID: | MC16889-1 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 87.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0027 | 0.00050 | mg/kg | UJ |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0067 | 0.00031 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0067 | 0.0012 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0067 | 0.00035 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0027 | 0.00023 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0027 | 0.00066 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.033 | 0.033 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0067 | 0.00091 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.0027 | 0.00032 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0067 | 0.00062 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0067 | 0.00067 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0067 | 0.00030 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0067 | 0.00024 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0027 | 0.00038 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0067 | 0.00067 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0067 | 0.00066 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0027 | 0.0015 | mg/kg | |
| 91-20-3 | Naphthalene | 0.0165 | 0.0067 | 0.0017 | mg/kg | J |
| 103-65-1 | n-Propylbenzene | ND | 0.0067 | 0.0014 | mg/kg | UJ |
| 100-42-5 | Styrene | ND | 0.0067 | 0.00031 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0067 | 0.0013 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0027 | 0.00057 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0027 | 0.00031 | mg/kg | |
| 108-88-3 | Toluene | 0.0013 | 0.0067 | 0.0011 | mg/kg | J J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0067 | 0.00032 | mg/kg | UJ |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0067 | 0.00031 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0027 | 0.00042 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0027 | 0.00098 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0027 | 0.00028 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0027 | 0.00041 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0067 | 0.00039 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0067 | 0.00030 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0067 | 0.00029 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0067 | 0.00075 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0027 | 0.00036 | mg/kg | |
| | m,p-Xylene | 0.0023 | 0.0027 | 0.0011 | mg/kg | J J |
| 95-47-6 | o-Xylene | ND | 0.0027 | 0.00032 | mg/kg | UJ |
| 1330-20-7 | Xylene (total) | 0.0023 | 0.0027 | 0.00032 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-49-11 | | |
| Lab Sample ID: | MC16889-1 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 87.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 79% | 84% | 70-130% |
| 2037-26-5 | Toluene-D8 | 90% | 91% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 83% | 82% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

(a) Confirmation run.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-49-11 | | |
| Lab Sample ID: | MC16889-1 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | 87.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB45003.D | 1 | 12/19/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.1 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0029 | 0.0013 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0029 | 0.0011 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 101% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 115% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-49-21 | | |
| Lab Sample ID: | MC16889-2 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 72.2 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53060.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 3.66 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0095 | 0.0024 | mg/kg | |
| 107-02-8 | Acrolein | ND | 0.047 | 0.019 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 0.047 | 0.0024 | mg/kg | |
| 71-43-2 | Benzene | 0.0020 | 0.00095 | 0.00056 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0095 | 0.00042 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0095 | 0.00071 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0038 | 0.00040 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0038 | 0.0038 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0038 | 0.00098 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0095 | 0.0024 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0095 | 0.00035 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0095 | 0.00043 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0095 | 0.0017 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0095 | 0.00031 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0038 | 0.0014 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0038 | 0.00052 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0095 | 0.0024 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0095 | 0.0038 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0038 | 0.00098 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0095 | 0.00088 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0095 | 0.0021 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0095 | 0.00043 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0038 | 0.00056 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0038 | 0.00041 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0038 | 0.00043 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0038 | 0.00040 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0038 | 0.0022 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0038 | 0.00051 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0038 | 0.00054 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0038 | 0.00070 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0038 | 0.00057 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0038 | 0.00054 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-49-21 | | |
| Lab Sample ID: | MC16889-2 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 72.2 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0038 | 0.00070 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0095 | 0.00044 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0095 | 0.0016 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0095 | 0.00050 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0038 | 0.00032 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0038 | 0.00094 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.047 | 0.047 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0095 | 0.0013 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0062 | 0.0038 | 0.00046 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0095 | 0.00088 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0095 | 0.00095 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0095 | 0.00043 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0095 | 0.00034 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0038 | 0.00055 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0095 | 0.00095 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0095 | 0.00093 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0038 | 0.0022 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.0095 | 0.0024 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0095 | 0.0019 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0095 | 0.00044 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0095 | 0.0019 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0038 | 0.00080 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0038 | 0.00043 | mg/kg | |
| 108-88-3 | Toluene | 0.0059 | 0.0095 | 0.0016 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0095 | 0.00045 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0095 | 0.00043 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0038 | 0.00060 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0038 | 0.0014 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0038 | 0.00040 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0038 | 0.00058 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0095 | 0.00055 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0095 | 0.00042 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0095 | 0.00040 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0095 | 0.0011 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0038 | 0.00052 | mg/kg | |
| | m,p-Xylene | 0.0015 | 0.0038 | 0.0015 | mg/kg | J |
| 95-47-6 | o-Xylene | 0.00059 | 0.0038 | 0.00045 | mg/kg | J |
| 1330-20-7 | Xylene (total) | 0.0021 | 0.0038 | 0.00045 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-49-21 | | |
| Lab Sample ID: | MC16889-2 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 72.2 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 84% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-49-21 | | |
| Lab Sample ID: | MC16889-2 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | 72.2 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB45004.D | 1 | 12/19/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.8 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0034 | 0.0015 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0034 | 0.0013 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 118% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 121% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-49-31 | | |
| Lab Sample ID: | MC16889-3 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 83.2 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53061.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.65 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0053 | 0.0013 | mg/kg | |
| 107-02-8 | Acrolein | ND | 0.027 | 0.011 | mg/kg | |
| 107-13-1 | Acrylonitrile | ND | 0.027 | 0.0013 | mg/kg | |
| 71-43-2 | Benzene | 0.0023 | 0.00053 | 0.00031 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0053 | 0.00040 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0021 | 0.0021 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0021 | 0.00055 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0053 | 0.0013 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0053 | 0.00020 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0053 | 0.00094 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0053 | 0.00017 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0021 | 0.00077 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0021 | 0.00029 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0053 | 0.0013 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0053 | 0.0021 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0021 | 0.00055 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0053 | 0.00049 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0053 | 0.0012 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0053 | 0.00024 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0021 | 0.00031 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0021 | 0.00023 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0021 | 0.00024 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0021 | 0.0012 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0021 | 0.00029 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0021 | 0.00031 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0021 | 0.00039 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0021 | 0.00032 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0021 | 0.00030 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presnmptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-49-31 | | |
| Lab Sample ID: | MC16889-3 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 83.2 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0021 | 0.00040 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0053 | 0.00025 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0053 | 0.00092 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0053 | 0.00028 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0021 | 0.00018 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0021 | 0.00053 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.027 | 0.027 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0053 | 0.00072 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0065 | 0.0021 | 0.00026 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0053 | 0.00049 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0053 | 0.00053 | mg/kg | |
| 98-82-8 | Isopropylbenzene | 0.00078 | 0.0053 | 0.00024 | mg/kg | J |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0053 | 0.00019 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0021 | 0.00031 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0053 | 0.00053 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0053 | 0.00052 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0021 | 0.0012 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.0053 | 0.0013 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0053 | 0.0011 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0053 | 0.00025 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0053 | 0.0011 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0021 | 0.00045 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0021 | 0.00024 | mg/kg | |
| 108-88-3 | Toluene | 0.0053 | 0.0053 | 0.00090 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0053 | 0.00025 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0021 | 0.00033 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0021 | 0.00078 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0021 | 0.00032 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0053 | 0.00031 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0053 | 0.00023 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0053 | 0.00059 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0021 | 0.00029 | mg/kg | |
| | m,p-Xylene | 0.0017 | 0.0021 | 0.00084 | mg/kg | J |
| 95-47-6 | o-Xylene | 0.00072 | 0.0021 | 0.00025 | mg/kg | J |
| 1330-20-7 | Xylene (total) | 0.0024 | 0.0021 | 0.00025 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated valne
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-49-31 | | |
| Lab Sample ID: | MC16889-3 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 83.2 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromoflnoromethane | 83% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 88% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte fouud in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-49-31 | | |
| Lab Sample ID: | MC16889-3 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | 83.2 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB45005.D | 1 | 12/20/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.3 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0030 | 0.0013 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0030 | 0.0011 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 115% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 127% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-51-14 | | |
| Lab Sample ID: | MC16889-4 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 96.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53062.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.62 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0056 | 0.0014 | mg/kg | |
| 107-02-8 | Acrolein | ND | 0.028 | 0.011 | mg/kg | U |
| 107-13-1 | Acrylonitrile | ND | 0.028 | 0.0014 | mg/kg | |
| 71-43-2 | Benzene | 0.00065 | 0.00056 | 0.00033 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0056 | 0.00025 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0056 | 0.00042 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0023 | 0.00024 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0023 | 0.0023 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0023 | 0.00058 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0056 | 0.0014 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0056 | 0.00021 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0056 | 0.00026 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0056 | 0.00099 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0056 | 0.00019 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0023 | 0.00082 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0023 | 0.00031 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0056 | 0.0014 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0056 | 0.0023 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0023 | 0.00058 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0056 | 0.00052 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0056 | 0.0012 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0056 | 0.00026 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0023 | 0.00033 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0023 | 0.00024 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0023 | 0.00025 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0023 | 0.00024 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0023 | 0.0013 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0023 | 0.00030 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0023 | 0.00032 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0023 | 0.00041 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0023 | 0.00034 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0023 | 0.00032 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-51-14 | | |
| Lab Sample ID: | MC16889-4 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 96.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0023 | 0.00042 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | 0.0012 | 0.0056 | 0.00026 | mg/kg | J |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0056 | 0.00098 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0056 | 0.00030 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0023 | 0.00019 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0023 | 0.00056 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.028 | 0.028 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0056 | 0.00077 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0017 | 0.0023 | 0.00027 | mg/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0056 | 0.00052 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0056 | 0.00056 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0056 | 0.00026 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0056 | 0.00020 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0023 | 0.00032 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0056 | 0.00056 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0056 | 0.00056 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0023 | 0.0013 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.0056 | 0.0014 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0056 | 0.0011 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0056 | 0.00026 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0056 | 0.0011 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0023 | 0.00048 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0023 | 0.00026 | mg/kg | |
| 108-88-3 | Toluene | 0.0021 | 0.0056 | 0.00096 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0056 | 0.00027 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0056 | 0.00026 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0023 | 0.00035 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0023 | 0.00083 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0023 | 0.00024 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0023 | 0.00034 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0056 | 0.00033 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0056 | 0.00025 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0056 | 0.00024 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0056 | 0.00063 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0023 | 0.00031 | mg/kg | |
| | m,p-Xylene | ND | 0.0023 | 0.00089 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.0023 | 0.00027 | mg/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.0023 | 0.00027 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-51-14 | | |
| Lab Sample ID: | MC16889-4 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 96.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 83% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 83% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-51-14 | | |
| Lab Sample ID: | MC16889-4 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | 96.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB45006.D | 1 | 12/20/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.3 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0011 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.00099 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 114% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 121% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte fouud in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-51-21 | | |
| Lab Sample ID: | MC16889-5 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 96.0 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53097.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.01 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0052 | 0.0013 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 0.026 | 0.010 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 0.026 | 0.0013 | mg/kg | |
| 71-43-2 | Benzene | 0.00086 | 0.00052 | 0.00031 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0052 | 0.00023 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0052 | 0.00039 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0021 | 0.0021 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0021 | 0.00054 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0052 | 0.0013 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0052 | 0.00019 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0052 | 0.00024 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0052 | 0.00092 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0052 | 0.00017 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0021 | 0.00076 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0021 | 0.00029 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0052 | 0.0013 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0052 | 0.0021 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0021 | 0.00054 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0052 | 0.00048 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0052 | 0.0011 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0052 | 0.00024 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0021 | 0.00031 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0021 | 0.00022 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0021 | 0.00023 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0021 | 0.0012 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0021 | 0.00028 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0021 | 0.00030 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0021 | 0.00038 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0021 | 0.00031 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0021 | 0.00030 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte fonnd in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-51-21 | | |
| Lab Sample ID: | MC16889-5 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 96.0 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0021 | 0.00039 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0052 | 0.00024 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0052 | 0.00090 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0052 | 0.00027 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0021 | 0.00018 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0021 | 0.00052 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.026 | 0.026 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0052 | 0.00071 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0021 | 0.0021 | 0.00025 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0052 | 0.00048 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0052 | 0.00052 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0052 | 0.00024 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0052 | 0.00019 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0021 | 0.00030 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0052 | 0.00052 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0052 | 0.00051 | mg/kg | |
| 75-09-2 | Methylene chloride | 0.0012 | 0.0021 | 0.0012 | mg/kg | J |
| 91-20-3 | Naphthalene | ND | 0.0052 | 0.0013 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0052 | 0.0011 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0052 | 0.00024 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0052 | 0.0010 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0021 | 0.00044 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0021 | 0.00024 | mg/kg | |
| 108-88-3 | Toluene | 0.0026 | 0.0052 | 0.00088 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0052 | 0.00025 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0052 | 0.00024 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0021 | 0.00033 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0021 | 0.00076 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0021 | 0.00032 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0052 | 0.00030 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0052 | 0.00023 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0052 | 0.00022 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0052 | 0.00058 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0021 | 0.00028 | mg/kg | |
| | m,p-Xylene | ND | 0.0021 | 0.00082 | mg/kg | |
| 95-47-6 | o-Xylene | 0.00036 | 0.0021 | 0.00025 | mg/kg | J |
| 1330-20-7 | Xylene (total) | 0.0011 | 0.0021 | 0.00025 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-51-21 | | |
| Lab Sample ID: | MC16889-5 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 96.0 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 84% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 87% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 80% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-51-21 | | |
| Lab Sample ID: | MC16889-5 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | 96.0 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB45008.D | 1 | 12/20/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.1 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.0010 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 114% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 121% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-51-31 | | |
| Lab Sample ID: | MC16889-6 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 96.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53098.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.74 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0054 | 0.0014 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 0.027 | 0.011 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 0.027 | 0.0014 | mg/kg | |
| 71-43-2 | Benzene | 0.00084 | 0.00054 | 0.00032 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0054 | 0.00024 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0054 | 0.00041 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0022 | 0.00023 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0022 | 0.0022 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0022 | 0.00057 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0054 | 0.0014 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0054 | 0.00020 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0054 | 0.00025 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0054 | 0.00096 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0054 | 0.00018 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0022 | 0.00079 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0022 | 0.00030 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0054 | 0.0014 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0054 | 0.0022 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0022 | 0.00056 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0054 | 0.00051 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0054 | 0.0012 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0054 | 0.00025 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0022 | 0.00032 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0022 | 0.00024 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0022 | 0.00025 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0022 | 0.00023 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0022 | 0.0012 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0022 | 0.00029 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0022 | 0.00031 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0022 | 0.00040 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0022 | 0.00033 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0022 | 0.00031 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-51-31 | | |
| Lab Sample ID: | MC16889-6 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 96.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0022 | 0.00041 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0054 | 0.00025 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0054 | 0.00095 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0054 | 0.00029 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0022 | 0.00019 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0022 | 0.00054 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.027 | 0.027 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0054 | 0.00074 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0022 | 0.0022 | 0.00026 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0054 | 0.00051 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0054 | 0.00054 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0054 | 0.00025 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0054 | 0.00019 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0022 | 0.00031 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0054 | 0.00054 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0054 | 0.00054 | mg/kg | |
| 75-09-2 | Methylene chloride | ~~0.0013~~ | 0.0022 | 0.0013 | mg/kg | J |
| 91-20-3 | Naphthalene | ND | 0.0054 | 0.0014 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0054 | 0.0011 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0054 | 0.00025 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0054 | 0.0011 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0022 | 0.00046 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0022 | 0.00025 | mg/kg | |
| 108-88-3 | Toluene | 0.0028 | 0.0054 | 0.00092 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0054 | 0.00026 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0054 | 0.00025 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0022 | 0.00034 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0022 | 0.00080 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0022 | 0.00023 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0022 | 0.00033 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0054 | 0.00032 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0054 | 0.00024 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0054 | 0.00023 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0054 | 0.00061 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0022 | 0.00030 | mg/kg | |
| | m,p-Xylene | ND | 0.0022 | 0.00086 | mg/kg | |
| 95-47-6 | o-Xylene | 0.00032 | 0.0022 | 0.00026 | mg/kg | J |
| 1330-20-7 | Xylene (total) | 0.0011 | 0.0022 | 0.00026 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-51-31 | | |
| Lab Sample ID: | MC16889-6 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 96.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 82% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated valne
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-51-31 | | |
| Lab Sample ID: | MC16889-6 | Date Sampled: | 12/12/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | 96.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB45009.D | 1 | 12/20/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.2 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0011 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.00099 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 119% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 124% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated valne
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16889-7 | Date Sampled: | 12/12/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | N71417.D | 1 | 12/24/12 | KD | n/a | n/a | MSN2685 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 3.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.2 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.24 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.62 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.3 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.58 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.78 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.4 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.61 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.55 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.64 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.61 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.87 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.47 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.50 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 1.3 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.50 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.73 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.65 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.48 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.53 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.93 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.45 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.64 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.7 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.62 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.41 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.95 | ug/l | |

ND = Nnt detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates aualyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16889-7 | Date Sampled: | 12/12/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.72 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.64 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 1.6 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.91 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.45 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.20 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 15 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.81 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.51 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 2.1 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.50 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.57 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.41 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 2.9 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.1 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.83 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.58 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.45 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.57 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.60 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.42 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.51 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.85 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.50 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.78 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.29 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.85 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.35 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.47 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.3 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.63 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.73 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.58 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.58 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16889-7 | Date Sampled: | 12/12/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 103% | | 70-130% |
| 460-00-4 | 4-Bromofluorobeuzene | 120% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16889-7 | Date Sampled: | 12/12/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/14/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB45036.D | 1 | 12/21/12 | CZ | 12/21/12 | OP31513 | GBB2726 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 34.0 ml | 2.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.015 | 0.013 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.015 | 0.011 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 97% | | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 90% | | 36-173% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-52-13 | | |
| Lab Sample ID: | MC16889-8 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 95.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53110.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.83 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0054 | 0.0014 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 0.027 | 0.011 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 0.027 | 0.0014 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.00054 | 0.00032 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0054 | 0.00024 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0054 | 0.00041 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0022 | 0.00023 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0022 | 0.0022 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0022 | 0.00057 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0054 | 0.0014 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0054 | 0.00020 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0054 | 0.00025 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0054 | 0.00096 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0054 | 0.00018 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0022 | 0.00079 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0022 | 0.00030 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0054 | 0.0014 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0054 | 0.0022 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0022 | 0.00056 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0054 | 0.00050 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0054 | 0.0012 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0054 | 0.00025 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0022 | 0.00032 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0022 | 0.00024 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0022 | 0.00025 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0022 | 0.00023 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0022 | 0.0012 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0022 | 0.00029 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0022 | 0.00031 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0022 | 0.00040 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0022 | 0.00033 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0022 | 0.00031 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-52-13 | | |
| Lab Sample ID: | MC16889-8 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 95.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |



VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0022 | 0.00041 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0054 | 0.00025 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0054 | 0.00094 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0054 | 0.00029 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0022 | 0.00019 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0022 | 0.00054 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.027 | 0.027 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0054 | 0.00074 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.0022 | 0.00026 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0054 | 0.00051 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0054 | 0.00054 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0054 | 0.00025 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0054 | 0.00019 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0022 | 0.00031 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0054 | 0.00054 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0054 | 0.00054 | mg/kg | |
| 75-09-2 | Methylene chloride | ~~0.0013~~ | 0.0022 | 0.0013 | mg/kg | J |
| 91-20-3 | Naphthalene | ND | 0.0054 | 0.0014 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0054 | 0.0011 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0054 | 0.00025 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0054 | 0.0011 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0022 | 0.00046 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0022 | 0.00025 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.0054 | 0.00092 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorohenzene | ND | 0.0054 | 0.00026 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0054 | 0.00025 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0022 | 0.00034 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0022 | 0.00080 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0022 | 0.00023 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0022 | 0.00033 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0054 | 0.00032 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0054 | 0.00024 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0054 | 0.00023 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0054 | 0.00061 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0022 | 0.00030 | mg/kg | |
| | m,p-Xylene | ND | 0.0022 | 0.00086 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.0022 | 0.00026 | mg/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.0022 | 0.00026 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-52-13 | | |
| Lab Sample ID: | MC16889-8 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 95.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 87% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 80% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-52-13 | | |
| Lab Sample ID: | MC16889-8 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 95.1 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB45010.D | 1 | 12/20/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| Run #2 [a] | BK20276.D | 1 | 12/28/12 | AP | 12/20/12 | OP31493 | GBK733 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.4 g | 50.0 ml |
| Run #2 | 15.6 g | 50.0 ml |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0012 | mg/kg | R |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.0010 | mg/kg | R |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 0% [b] | 133% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 0% [b] | 97% | 61-167% |

(a) Confirmation run.
(b) Surrogate standard not added. Results confirmed by re-extraction/reanalysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-52-25 | | |
| Lab Sample ID: | MC16889-9 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 95.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53111.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.76 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0055 | 0.0014 | mg/kg | uJ |
| 107-02-8 | Acrolein | ND | 0.027 | 0.011 | mg/kg | uJ |
| 107-13-1 | Acrylonitrile | ND | 0.027 | 0.0014 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.00055 | 0.00032 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0055 | 0.00024 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0055 | 0.00041 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0022 | 0.00023 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0022 | 0.0022 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0022 | 0.00057 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0055 | 0.0014 | mg/kg | |
| 104-51-8 | n-Bntylbenzene | ND | 0.0055 | 0.00020 | mg/kg | |
| 135-98-8 | sec-Butylhenzene | ND | 0.0055 | 0.00025 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0055 | 0.00097 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0055 | 0.00018 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0022 | 0.00080 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0022 | 0.00030 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0055 | 0.0014 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0055 | 0.0022 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0022 | 0.00057 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0055 | 0.00051 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0055 | 0.0012 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0055 | 0.00025 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0022 | 0.00032 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0022 | 0.00024 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0022 | 0.00025 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0022 | 0.00023 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0022 | 0.0012 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0022 | 0.00030 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0022 | 0.00032 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0022 | 0.00040 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0022 | 0.00033 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0022 | 0.00031 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte fonnd in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-52-25 | | |
| Lab Sample ID: | MC16889-9 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 95.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0022 | 0.00041 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0055 | 0.00025 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0055 | 0.00095 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0055 | 0.00029 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0022 | 0.00019 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0022 | 0.00054 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.027 | 0.027 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0055 | 0.00075 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.0022 | 0.00026 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0055 | 0.00051 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0055 | 0.00055 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0055 | 0.00025 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0055 | 0.00020 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0022 | 0.00032 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0055 | 0.00055 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0055 | 0.00054 | mg/kg | |
| 75-09-2 | Methylene chloride | ~~0.0016~~ | 0.0022 | 0.0013 | mg/kg | J |
| 91-20-3 | Naphthalene | ND | 0.0055 | 0.0014 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0055 | 0.0011 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0055 | 0.00026 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0055 | 0.0011 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0022 | 0.00047 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0022 | 0.00025 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.0055 | 0.00093 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0055 | 0.00026 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0055 | 0.00025 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0022 | 0.00035 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0022 | 0.00081 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0022 | 0.00023 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0022 | 0.00033 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0055 | 0.00032 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0055 | 0.00025 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0055 | 0.00023 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0055 | 0.00061 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0022 | 0.00030 | mg/kg | |
| | m,p-Xylene | ND | 0.0022 | 0.00086 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.0022 | 0.00026 | mg/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.0022 | 0.00026 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated valne
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-52-25 | | |
| Lab Sample ID: | MC16889-9 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 95.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 84% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 80% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-52-25 | | |
| Lab Sample ID: | MC16889-9 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 95.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB45011.D | 1 | 12/20/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| Run #2 [a] | BK20277.D | 1 | 12/28/12 | AP | 12/20/12 | OP31493 | GBK733 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.3 g | 50.0 ml |
| Run #2 | 15.5 g | 50.0 ml |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0012 | mg/kg | R |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.00099 | mg/kg | R |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 0% [b] | 132% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 0% [b] | 104% | 61-167% |

(a) Confirmation run.
(b) Surrogate standard not added. Results confirmed by re-extraction/reanalysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presnmptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-52-25 DUP | | |
| Lab Sample ID: | MC16889-10 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 96.5 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53112.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.86 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0053 | 0.0013 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 0.027 | 0.011 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 0.027 | 0.0013 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.00053 | 0.00031 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0053 | 0.00040 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0021 | 0.00023 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0021 | 0.0021 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0021 | 0.00055 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0053 | 0.0013 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0053 | 0.00020 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0053 | 0.00094 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0053 | 0.00018 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0021 | 0.00077 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0021 | 0.00029 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0053 | 0.0013 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0053 | 0.0021 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0021 | 0.00055 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0053 | 0.00049 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0053 | 0.0012 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0053 | 0.00024 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0021 | 0.00031 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0021 | 0.00023 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0021 | 0.00024 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0021 | 0.0012 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0021 | 0.00029 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0021 | 0.00031 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0021 | 0.00039 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0021 | 0.00032 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0021 | 0.00031 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-52-25 DUP | | |
| Lab Sample ID: | MC16889-10 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 96.5 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0021 | 0.00040 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0053 | 0.00025 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0053 | 0.00092 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0053 | 0.00028 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0021 | 0.00018 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0021 | 0.00053 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.027 | 0.027 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0053 | 0.00073 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.0021 | 0.00026 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0053 | 0.00050 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0053 | 0.00053 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 99-87-6 | p-Isopropyltolnene | ND | 0.0053 | 0.00019 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0021 | 0.00031 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0053 | 0.00053 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0053 | 0.00053 | mg/kg | |
| 75-09-2 | Methylene chloride | 0.0014 | 0.0021 | 0.0012 | mg/kg | J |
| 91-20-3 | Naphthalene | ND | 0.0053 | 0.0013 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0053 | 0.0011 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0053 | 0.00025 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0053 | 0.0011 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0021 | 0.00045 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0021 | 0.00024 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.0053 | 0.00090 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0053 | 0.00025 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0021 | 0.00034 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0021 | 0.00078 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0021 | 0.00023 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0021 | 0.00032 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0053 | 0.00031 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0053 | 0.00023 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0053 | 0.00060 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0021 | 0.00029 | mg/kg | |
| | m,p-Xylene | ND | 0.0021 | 0.00084 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.0021 | 0.00026 | mg/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.0021 | 0.00026 | mg/kg | |

ND = Not detected  MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a componnd

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-52-25 DUP | | |
| Lab Sample ID: | MC16889-10 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 96.5 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 79% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-52-25 DUP | | |
| Lab Sample ID: | MC16889-10 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | 96.5 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB45012.D | 1 | 12/20/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.0 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.0010 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 126% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 130% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-52-29 | | |
| Lab Sample ID: | MC16889-11 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 95.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53113.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.03 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0052 | 0.0013 | mg/kg | uJ |
| 107-02-8 | Acrolein | ND | 0.026 | 0.010 | mg/kg | uJ |
| 107-13-1 | Acrylonitrile | ND | 0.026 | 0.0013 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.00052 | 0.00031 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0052 | 0.00023 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0052 | 0.00039 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0021 | 0.0021 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0021 | 0.00054 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0052 | 0.0013 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0052 | 0.00019 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0052 | 0.00024 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0052 | 0.00091 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0052 | 0.00017 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0021 | 0.00075 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0021 | 0.00029 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0052 | 0.0013 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0052 | 0.0021 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0021 | 0.00053 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0052 | 0.00048 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0052 | 0.0011 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0052 | 0.00024 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0021 | 0.00031 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0021 | 0.00022 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0021 | 0.00023 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0021 | 0.0012 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0021 | 0.00028 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0021 | 0.00030 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0021 | 0.00038 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0021 | 0.00031 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0021 | 0.00030 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte fonnd in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-52-29 | | |
| Lab Sample ID: | MC16889-11 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 95.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0021 | 0.00039 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0052 | 0.00024 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0052 | 0.00090 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0052 | 0.00027 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0021 | 0.00018 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0021 | 0.00051 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.026 | 0.026 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0052 | 0.00071 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.0021 | 0.00025 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0052 | 0.00048 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0052 | 0.00052 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0052 | 0.00024 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0052 | 0.00018 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0021 | 0.00030 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0052 | 0.00052 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0052 | 0.00051 | mg/kg | |
| 75-09-2 | Methylene chloride | ~~0.0013~~ | 0.0021 | 0.0012 | mg/kg | J |
| 91-20-3 | Naphthalene | ND | 0.0052 | 0.0013 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0052 | 0.0011 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0052 | 0.00024 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0052 | 0.0010 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0021 | 0.00044 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0021 | 0.00024 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.0052 | 0.00088 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorohenzene | ND | 0.0052 | 0.00025 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0052 | 0.00024 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0021 | 0.00033 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0021 | 0.00076 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0021 | 0.00032 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0052 | 0.00030 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0052 | 0.00023 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0052 | 0.00022 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0052 | 0.00058 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0021 | 0.00028 | mg/kg | |
| | m,p-Xylene | ND | 0.0021 | 0.00082 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.0021 | 0.00025 | mg/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.0021 | 0.00025 | mg/kg | |

ND = Not detected  MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-52-29 | | |
| Lab Sample ID: | MC16889-11 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 95.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 80% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-52-29 | | |
| Lab Sample ID: | MC16889-11 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Metbod: | SW846 8011 SW846 8011 | Percent Solids: | 95.8 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB45013.D | 1 | 12/20/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.8 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0025 | 0.0011 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0025 | 0.00098 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 124% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 129% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-53-15 | | |
| Lab Sample ID: | MC16889-12 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 94.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53106.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.94 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~0.158~~ 0.158 U | ~~0.0054~~ | 0.0014 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 0.027 | 0.011 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 0.027 | 0.0013 | mg/kg | |
| 71-43-2 | Benzene | 0.0014 | 0.00054 | 0.00032 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0054 | 0.00024 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0054 | 0.00040 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0021 | 0.00023 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0021 | 0.0021 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0021 | 0.00056 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0054 | 0.0013 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0054 | 0.00020 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0054 | 0.00025 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0054 | 0.00094 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0054 | 0.00018 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0021 | 0.00078 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0021 | 0.00029 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0054 | 0.0013 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0054 | 0.0021 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0021 | 0.00055 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0054 | 0.00050 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0054 | 0.0012 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0054 | 0.00024 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0021 | 0.00032 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0021 | 0.00023 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0021 | 0.00024 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0021 | 0.00023 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0021 | 0.0012 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0021 | 0.00029 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0021 | 0.00031 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0021 | 0.00039 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0021 | 0.00032 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0021 | 0.00031 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-53-15 | | |
| Lab Sample ID: | MC16889-12 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 94.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0021 | 0.00040 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0054 | 0.00025 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0054 | 0.00093 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0054 | 0.00028 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0021 | 0.00018 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0021 | 0.00053 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.027 | 0.027 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0054 | 0.00073 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0022 | 0.0021 | 0.00026 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0054 | 0.00050 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0054 | 0.00054 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0054 | 0.00024 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0054 | 0.00019 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0021 | 0.00031 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0054 | 0.00054 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0054 | 0.00053 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0021 | 0.0012 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.0054 | 0.0013 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0054 | 0.0011 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0054 | 0.00025 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0054 | 0.0011 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0021 | 0.00046 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0021 | 0.00025 | mg/kg | |
| 108-88-3 | Toluene | 0.0033 | 0.0054 | 0.00091 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0054 | 0.00025 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0054 | 0.00025 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0021 | 0.00034 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0021 | 0.00079 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0021 | 0.00023 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0021 | 0.00033 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0054 | 0.00031 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0054 | 0.00024 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0054 | 0.00023 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0054 | 0.00060 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0021 | 0.00029 | mg/kg | |
| | m,p-Xylene | ND | 0.0021 | 0.00085 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.0021 | 0.00026 | mg/kg | |
| 1330-20-7 | Xylene (total) | 0.00063 | 0.0021 | 0.00026 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-53-15 | | |
| Lab Sample ID: | MC16889-12 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 94.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 81% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte fonnd in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-53-15 | | |
| Lab Sample ID: | MC16889-12 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | 94.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB45014.D | 1 | 12/20/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.1 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.0010 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 110% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 120% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-53-27 | | |
| Lab Sample ID: | MC16889-13 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 95.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53114.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.99 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~0.0773~~ U | 0.0052 | 0.0013 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 0.026 | 0.010 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 0.026 | 0.0013 | mg/kg | |
| 71-43-2 | Benzene | 0.00070 | 0.00052 | 0.00031 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0052 | 0.00023 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0052 | 0.00039 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0021 | 0.0021 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0021 | 0.00054 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0052 | 0.0013 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0052 | 0.00019 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0052 | 0.00024 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0052 | 0.00092 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0052 | 0.00017 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0021 | 0.00076 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0021 | 0.00029 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0052 | 0.0013 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0052 | 0.0021 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0021 | 0.00054 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0052 | 0.00049 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0052 | 0.0012 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0052 | 0.00024 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0021 | 0.00031 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0021 | 0.00023 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0021 | 0.00024 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0021 | 0.0012 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0021 | 0.00028 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0021 | 0.00030 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0021 | 0.00039 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0021 | 0.00032 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0021 | 0.00030 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-53-27 | | |
| Lab Sample ID: | MC16889-13 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 95.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0021 | 0.00039 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0052 | 0.00024 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0052 | 0.00091 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0052 | 0.00028 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0021 | 0.00018 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0021 | 0.00052 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.026 | 0.026 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0052 | 0.00071 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0018 | 0.0021 | 0.00025 | mg/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0052 | 0.00049 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0052 | 0.00052 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0052 | 0.00024 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0052 | 0.00019 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0021 | 0.00030 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0052 | 0.00052 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0052 | 0.00052 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0021 | 0.0012 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.0052 | 0.0013 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0052 | 0.0011 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0052 | 0.00025 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0052 | 0.0010 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0021 | 0.00045 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0021 | 0.00024 | mg/kg | |
| 108-88-3 | Toluene | 0.0020 | 0.0052 | 0.00089 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0052 | 0.00025 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0052 | 0.00024 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0021 | 0.00033 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0021 | 0.00077 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0021 | 0.00032 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0052 | 0.00031 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0052 | 0.00023 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0052 | 0.00022 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0052 | 0.00059 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0021 | 0.00029 | mg/kg | |
| | m,p-Xylene | ND | 0.0021 | 0.00083 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.0021 | 0.00025 | mg/kg | |
| 1330-20-7 | Xylene (total) | 0.00046 | 0.0021 | 0.00025 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-53-27 | | |
| Lab Sample ID: | MC16889-13 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 95.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 83% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 87% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 81% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-53-27 | | |
| Lab Sample ID: | MC16889-13 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | 95.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB45015.D | 1 | 12/20/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.3 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.0010 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 118% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 128% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-53-31 | | |
| Lab Sample ID: | MC16889-14 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 79.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53134.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 6.18 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0051 | 0.0013 | mg/kg | |
| 107-02-8 | Acrolein | ND | 0.026 | 0.010 | mg/kg | |
| 107-13-1 | Acrylonitrile | ND | 0.026 | 0.0013 | mg/kg | |
| 71-43-2 | Benzene | 0.0012 | 0.00051 | 0.00030 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0051 | 0.00023 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0051 | 0.00038 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0020 | 0.00022 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0020 | 0.0020 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0020 | 0.00053 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0051 | 0.0013 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0051 | 0.00019 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0051 | 0.00023 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0051 | 0.00090 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0051 | 0.00017 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0020 | 0.00074 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0020 | 0.00028 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0051 | 0.0013 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0051 | 0.0020 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0020 | 0.00053 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0051 | 0.00047 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0051 | 0.0011 | mg/kg | |
| 106-43-4 | p-Chlorotolnene | ND | 0.0051 | 0.00023 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0020 | 0.00030 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0020 | 0.00022 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0020 | 0.00023 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0020 | 0.00022 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0020 | 0.0012 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0020 | 0.00028 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0020 | 0.00029 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0020 | 0.00037 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0020 | 0.00031 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0020 | 0.00029 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-53-31 | | |
| Lab Sample ID: | MC16889-14 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 79.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0020 | 0.00038 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0051 | 0.00024 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0051 | 0.00089 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0051 | 0.00027 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0020 | 0.00017 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0020 | 0.00051 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.026 | 0.026 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0051 | 0.00069 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0019 | 0.0020 | 0.00025 | mg/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0051 | 0.00047 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0051 | 0.00051 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0051 | 0.00023 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0051 | 0.00018 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0020 | 0.00029 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0051 | 0.00051 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0051 | 0.00050 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0020 | 0.0012 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.0051 | 0.0013 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0051 | 0.0010 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0051 | 0.00024 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0051 | 0.0010 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0020 | 0.00043 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0020 | 0.00023 | mg/kg | |
| 108-88-3 | Toluene | 0.0027 | 0.0051 | 0.00087 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0051 | 0.00024 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0051 | 0.00023 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0020 | 0.00032 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0020 | 0.00075 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0020 | 0.00022 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0020 | 0.00031 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0051 | 0.00030 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0051 | 0.00023 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0051 | 0.00022 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0051 | 0.00057 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0020 | 0.00028 | mg/kg | |
| | m,p-Xylene | ND | 0.0020 | 0.00080 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.0020 | 0.00024 | mg/kg | |
| 1330-20-7 | Xylene (total) | 0.00071 | 0.0020 | 0.00024 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-53-31 | | |
| Lab Sample ID: | MC16889-14 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8260B | Percent Solids: | 79.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 82% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-53-31 | | |
| Lab Sample ID: | MC16889-14 | Date Sampled: | 12/13/12 |
| Matrix: | SO - Soil | Date Received: | 12/14/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | 79.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB45016.D | 1 | 12/20/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.1 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0031 | 0.0014 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0031 | 0.0012 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 118% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 122% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte fonnd in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES



## Misc. Forms

### Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

ACCUTEST LABORATORIES

# CHAIN OF CUSTODY

Accutest Laboratories of New England
495 Technology Center West, Building One
TEL 508-481-6200 FAX: 508-481-7753
www.accutest.com

PAGE 1 OF 2

FED EX Tracking # | Bottle Order Control #
Accutest Quote # | Accutest Job # MC16889

**Client / Reporting Information**

Company Name: URS
Street Address:
City State Zip
Project Contact: E. Kunkel | E-mail:
Phone # | Fax #
Sampler(s) Name(s): Wendy Pennington, Jason Stratter | Phone #

**Project Information**

Project Name: Roxana Drilling
Street:
City: Roxana, IL
Client PO#: 21562850.150000
Project Manager: D. Palmer

**Billing Information ( If different from Report to)**

Company Name: URS
Street Address:
City State Zip
Attention: PO#

**Requested Analysis ( see TEST CODE sheet)**

VOC 8260
VOC 8011

**Matrix Codes**

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED Sediment
OI Oil
LIQ - Other Liquid
AIR Air
SOL - Other Solid
WP - Wipe
FB-Field Blank
EB Equipment Blank
RB Rinse Blank
TB Trip Blank

| Accutest sample # | Field ID / Point of Collection | MeOH/DI vial # | Collection Date | Collection Time | Sampled By | Matrix | # of bottles | Number of preserved Bottles: HCl | H2SO4 | HNO3 | NaOH | None | DI Water | MeOH | Encore | Bisulfate | VOC 8260 | VOC 8011 | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | VMP-49-11 | | 12/12/12 | 1035 | WP/JS | SO | 4 | | | | | X | | X | | X | X | X | |
| -1S | VMP-49-11 MS | | | 1035 | | | | | | | | X | | X | | X | X | X | |
| -1SD | VMP-49-11 MSD | | | 1035 | | | | | | | | X | | X | | X | X | X | |
| -2 | VMP-49-21 | | | 1040 | | | | | | | | X | | X | | X | X | X | |
| -3 | VMP-49-31 | | | 1045 | | | | | | | | X | | X | | X | X | X | |
| -4 | VMP-51-14 | | | 1315 | | | | | | | | X | | X | | X | X | X | |
| -5 | VMP-51-21 | | | 1325 | | | | | | | | X | | X | | X | X | X | |
| -6 | VMP-51-31 | | | 1330 | | | | | | | | X | | X | | X | X | X | |
| -7 | Trip Blank | | | | | | | | | | | | | | | | X | X | |
| -8 | VMP-52-13 | | 12/13/12 | 1015 | WP/JS | SO | 4 | | | | | X | | X | | X | X | X | 4E3 10E, |
| -9 | VMP-52-25 | | | 1020 | | | | | | | | X | | X | | X | X | X | 10K6 |
| -10 | VMP-52-25 Dup | | | 1020 | | | | | | | | X | | X | | X | X | X | |

**Turnaround Time ( Business days)**

Approved By (Accutest PM) / Date

- [X] Std. 10 Business Days
- [ ] Std. 5 Business Days (By Contract only)
- [ ] 5 Day *RUSH*
- [ ] 3 Day *EMERGENCY*
- [ ] 2 Day *EMERGENCY*
- [ ] 1 Day *EMERGENCY*

Emergency & Rush T/A data available VIA Lablink

**Data Deliverable Information**

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [X] FULLT1 ( Level 3+4 )
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [X] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

**Comments / Special Instructions**

Sample Custody must be documented below each time samples change possession, including courier delivery.

| | Relinquished by Sampler | Date Time | Received By | Relinquished By | Date Time | Received By |
|---|---|---|---|---|---|---|
| 1 | Wendy Pennington | 12/13/12 1400 | Fed Ex | FEDX | 12-14-12 933 | |
| 2 | | | | | | |
| 3 | | | | | | |
| 4 | | | | | | |
| 5 | | | | Custody Seal # | [ ] Intact [ ] Not Intact | Preserved where applicable [ ] On Ice [X] Cooler Temp 4.3 |

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**MC16889: Chain of Custody**
**Page 1 of 3**

ACCUTEST LABORATORIES

# CHAIN OF CUSTODY

Accutest Laboratories of New England
495 Technology Center West, Building One
TEL: 508-481-6200 FAX: 508-481-7753
www.accutest.com

PAGE 2 OF 2

| | |
|---|---|
| FED EX Tracking # | Bottle Order Control # |
| Accutest Quote # | Accutest Job # MC16889 |

| Client / Reporting Information | Project Information | Billing Information (If different from Report to) |
|---|---|---|
| Company Name: URS | Project Name: Roxana Drilling | Company Name: URS |
| Street Address: | Street: | Street Address: |
| City: State: Zip: | City: Roxana IL | City: State: Zip: |
| Project Contact: E. Kunkel E-mail: | Project #: 21562850.05000 | Attention: PO#: |
| Phone #: Fax #: | Client PO#: | |
| Sampler(s) Name(s): Wendy Pennington, Julian Stratter Phone #: | Project Manager: D. Palmer | |

Requested Analysis (see TEST CODE sheet): VOC 8260, VOC 8011

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB - Equipment Blank; RB - Rinse Blank; TB - Trip Blank

| Accutest Sample # | Field ID / Point of Collection | MEOH/DI Vial # | Collection Date | Collection Time | Sampled by | Matrix | # of bottles | MCI | NaOH | HNO3 | H2SO4 | NONE | DI Water | MEOH | ENCORE | Bisulfite | VOC 8260 | VOC 8011 | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -11 | VMP-52-29 ✓ | | 12/13/12 | 1025 | WP/JS | SO | 4 | | | | | X | | X | | X | X | X | |
| -12 | VMP-53-15 ✓ | | ↓ | 1325 | ↓ | ↓ | ↓ | | | | | X | | X | | X | X | X | |
| -12S | VMP-53-15 MS ✓ | | | 1325 | | | | | | | | X | | X | | X | X | X | |
| -12SD | VMP-53-15 MSD ✓ | | | 1325 | | | | | | | | X | | X | | X | X | X | |
| -13 | VMP-53-27 ✓ | | | 1340 | | | | | | | | X | | X | | X | X | X | |
| -14 | VMP-53-31 ✓ | | ↓ | 1345 | ↓ | ↓ | ↓ | | | | | X | | X | | X | X | X | |

Turnaround Time (Business days) / Approved By (Accutest PM) / Date

- [x] Std. 10 Business Days
- [ ] Std. 5 Business Days (By Contract only)
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [x] FULLT1 (Level 3+4)
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [x] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery.

| Relinquished by Sampler | Date Time | Received By | Relinquished By | Date Time | Received By |
|---|---|---|---|---|---|
| 1 Wendy Pennington | 12/13/12 1400 | 1 FedEx | 2 FEDX | 12-14-12 530 | 2 [signature] |
| 3 | | 3 | 4 | | 4 |
| 5 | | 5 | | | |

Custody Seal # ☐ Intact ☐ Not intact — Preserved where applicable ☐ — On Ice ☑ — Cooler Temp. 13

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**MC16889: Chain of Custody**
**Page 2 of 3**

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC16889 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 12/14/2012 Delivery Method: Client Service Action Required at Login: No

Project: ROXANA DRILLING No. Coolers: 1 Airbill #'s:

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2. Custody Seals Intact: | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification: | Infared gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservatio | Y or N | N/A |
|---|---|---|
| 1. Trip Blank present / cooler: | ☑ ☐ | ☐ |
| 2. Trip Blank listed on COC: | ☑ ☐ | ☐ |
| 3. Samples preserved properly: | ☑ ☐ | |
| 4. VOCs headspace free: | ☑ ☐ | ☐ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles: | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree: | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1. Sample recvd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3. Condition of sample: | Intact |

| Sample Integrity - Instructions | Y or N | N/A |
|---|---|---|
| 1. Analysis requested is clear. | ☑ ☐ | |
| 2. Bottles received for unspecified tests | ☐ ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ ☐ | |
| 4. Compositing instructions clear: | ☐ ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ ☐ | ☑ |

Comments



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**MC16889: Chain of Custody**
**Page 3 of 3**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC16889

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562850.15000



| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC16889-1 | Collected: 12-DEC-12 10:35 By: WPJS | | Received: 14-DEC-12 By: VMP-49-11 | | | |
| MC16889-1 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16889-1 | SW846 8011 | 19-DEC-12 23:19 | CZ | 18-DEC-12 | NK | V8011SL |
| MC16889-1 | SW846 8260B | 21-DEC-12 20:03 | AMY | | | V8260SL+ |
| MC16889-1 | SW846 8260B | 26-DEC-12 10:03 | AMY | | | V8260SL+ |
| MC16889-2 | Collected: 12-DEC-12 10:40 By: WPJS | | Received: 14-DEC-12 By: VMP-49-21 | | | |
| MC16889-2 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16889-2 | SW846 8011 | 19-DEC-12 23:45 | CZ | 18-DEC-12 | NK | V8011SL |
| MC16889-2 | SW846 8260B | 21-DEC-12 20:33 | AMY | | | V8260SL+ |
| MC16889-3 | Collected: 12-DEC-12 10:45 By: WPJS | | Received: 14-DEC-12 By: VMP-49-31 | | | |
| MC16889-3 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16889-3 | SW846 8011 | 20-DEC-12 00:12 | CZ | 18-DEC-12 | NK | V8011SL |
| MC16889-3 | SW846 8260B | 21-DEC-12 21:03 | AMY | | | V8260SL+ |
| MC16889-4 | Collected: 12-DEC-12 13:15 By: WPJS | | Received: 14-DEC-12 By: VMP-51-14 | | | |
| MC16889-4 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16889-4 | SW846 8011 | 20-DEC-12 00:39 | CZ | 18-DEC-12 | NK | V8011SL |
| MC16889-4 | SW846 8260B | 21-DEC-12 21:33 | AMY | | | V8260SL+ |
| MC16889-5 | Collected: 12-DEC-12 13:25 By: WPJS | | Received: 14-DEC-12 By: VMP-51-21 | | | |
| MC16889-5 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16889-5 | SW846 8011 | 20-DEC-12 01:32 | CZ | 18-DEC-12 | NK | V8011SL |
| MC16889-5 | SW846 8260B | 26-DEC-12 10:34 | AMY | | | V8260SL+ |
| MC16889-6 | Collected: 12-DEC-12 13:30 By: WPJS | | Received: 14-DEC-12 By: VMP-51-31 | | | |
| MC16889-6 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC16889

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562850.15000



| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC16889-6 | SW846 8011 | 20-DEC-12 01:59 | CZ | 18-DEC-12 | NK | V8011SL |
| MC16889-6 | SW846 8260B | 26-DEC-12 11:04 | AMY | | | V8260SL+ |
| MC16889-7 | Collected: 12-DEC-12 00:00 By: WPJS | | | Received: 14-DEC-12 By: | | |
| TRIP BLANK | | | | | | |
| MC16889-7 | SW846 8011 | 21-DEC-12 22:10 | CZ | 21-DEC-12 | BJ | V8011SL |
| MC16889-7 | SW846 8260B | 24-DEC-12 11:40 | KD | | | V8260SL+ |
| MC16889-8 | Collected: 13-DEC-12 10:15 By: WPJS | | | Received: 14-DEC-12 By: | | |
| VMP-52-13 | | | | | | |
| MC16889-8 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16889-8 | SW846 8011 | 20-DEC-12 02:26 | CZ | 18-DEC-12 | NK | V8011SL |
| MC16889-8 | SW846 8260B | 26-DEC-12 17:09 | AMY | | | V8260SL+ |
| MC16889-8 | SW846 8011 | 28-DEC-12 15:28 | AP | 20-DEC-12 | AJ | V8011SL |
| MC16889-9 | Collected: 13-DEC-12 10:20 By: WPJS | | | Received: 14-DEC-12 By: | | |
| VMP-52-25 | | | | | | |
| MC16889-9 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16889-9 | SW846 8011 | 20-DEC-12 02:52 | CZ | 18-DEC-12 | NK | V8011SL |
| MC16889-9 | SW846 8260B | 26-DEC-12 17:40 | AMY | | | V8260SL+ |
| MC16889-9 | SW846 8011 | 28-DEC-12 15:52 | AP | 20-DEC-12 | AJ | V8011SL |
| MC16889-10 | Collected: 13-DEC-12 10:20 By: WPJS | | | Received: 14-DEC-12 By: | | |
| VMP-52-25 DUP | | | | | | |
| MC16889-10 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16889-10 | SW846 8011 | 20-DEC-12 03:19 | CZ | 18-DEC-12 | NK | V8011SL |
| MC16889-10 | SW846 8260B | 26-DEC-12 18:10 | AMY | | | V8260SL+ |
| MC16889-11 | Collected: 13-DEC-12 10:25 By: WPJS | | | Received: 14-DEC-12 By: | | |
| VMP-52-29 | | | | | | |
| MC16889-11 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16889-11 | SW846 8011 | 20-DEC-12 03:46 | CZ | 18-DEC-12 | NK | V8011SL |
| MC16889-11 | SW846 8260B | 26-DEC-12 18:41 | AMY | | | V8260SL+ |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC16889

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562850.15000



| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC16889-12 | Collected: 13-DEC-12 13:25 By: WPJS | | Received: 14-DEC-12 By: | | | |
| VMP-53-15 | | | | | | |
| MC16889-12 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16889-12 | SW846 8011 | 20-DEC-12 04:13 | CZ | 18-DEC-12 | NK | V8011SL |
| MC16889-12 | SW846 8260B | 26-DEC-12 15:08 | AMY | | | V8260SL+ |
| MC16889-13 | Collected: 13-DEC-12 13:40 By: WPJS | | Received: 14-DEC-12 By: | | | |
| VMP-53-27 | | | | | | |
| MC16889-13 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16889-13 | SW846 8011 | 20-DEC-12 04:40 | CZ | 18-DEC-12 | NK | V8011SL |
| MC16889-13 | SW846 8260B | 26-DEC-12 19:11 | AMY | | | V8260SL+ |
| MC16889-14 | Collected: 13-DEC-12 13:45 By: WPJS | | Received: 14-DEC-12 By: | | | |
| VMP-53-31 | | | | | | |
| MC16889-14 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16889-14 | SW846 8011 | 20-DEC-12 05:07 | CZ | 18-DEC-12 | NK | V8011SL |
| MC16889-14 | SW846 8260B | 27-DEC-12 18:10 | AMY | | | V8260SL+ |

# Accutest Internal Chain of Custody



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 12/14/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16889-1.1 | Walk In Ref #9 | Nick Krasinski | 12/17/12 11:42 | Retrieve from Storage |
| MC16889-1.1 | Nick Krasinski | Walk In Ref #9 | 12/17/12 21:22 | Return to Storage |
| MC16889-1.1 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |
| MC16889-1.1 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16889-1.2 | Walk In Ref #9 | Nick Krasinski | 12/17/12 11:42 | Retrieve from Storage |
| MC16889-1.2 | Nick Krasinski | Walk In Ref #9 | 12/17/12 21:22 | Return to Storage |
| MC16889-1.2 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |
| MC16889-1.2 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16889-1.3 | Walk In Ref #9 | Nick Krasinski | 12/17/12 11:42 | Retrieve from Storage |
| MC16889-1.3 | Nick Krasinski | Walk In Ref #9 | 12/17/12 21:22 | Return to Storage |
| MC16889-1.3 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |
| MC16889-1.3 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16889-1.6 | VOC Ref #10 | Amy Min Yang | 12/26/12 09:39 | Retrieve from Storage |
| MC16889-1.6 | Amy Min Yang | GCMSM | 12/26/12 09:39 | Load on Instrument |
| MC16889-1.7 | VOC Ref #10 | Amy Min Yang | 12/21/12 12:37 | Retrieve from Storage |
| MC16889-1.7 | Amy Min Yang | GCMSM | 12/21/12 12:37 | Load on Instrument |
| MC16889-1.8 | VOC Ref #10 | Amy Min Yang | 12/21/12 12:37 | Retrieve from Storage |
| MC16889-1.8 | Amy Min Yang | GCMSM | 12/21/12 12:37 | Load on Instrument |
| MC16889-1.9 | VOC Ref #10 | Amy Min Yang | 12/21/12 12:37 | Retrieve from Storage |
| MC16889-1.9 | Amy Min Yang | GCMSM | 12/21/12 12:37 | Load on Instrument |
| MC16889-1.11 | VOC Ref #10 | Gary Krasinski | 12/17/12 09:17 | Retrieve from Storage |
| MC16889-1.11 | Gary Krasinski | VOC Ref #10 | 12/17/12 09:42 | Return to Storage |
| MC16889-1.12 | VOC Ref #10 | Gary Krasinski | 12/17/12 09:45 | Retrieve from Storage |
| MC16889-1.12 | Gary Krasinski | VOC Ref #10 | 12/18/12 09:46 | Return to Storage |
| MC16889-2.1 | Walk In Ref #9 | Nick Krasinski | 12/17/12 11:42 | Retrieve from Storage |
| MC16889-2.1 | Nick Krasinski | Walk In Ref #9 | 12/17/12 21:22 | Return to Storage |
| MC16889-2.1 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |
| MC16889-2.1 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16889-2.2 | VOC Ref #10 | Amy Min Yang | 12/21/12 12:37 | Retrieve from Storage |
| MC16889-2.2 | Amy Min Yang | GCMSM | 12/21/12 12:37 | Load on Instrument |
| MC16889-2.4 | VOC Ref #10 | Gary Krasinski | 12/17/12 09:17 | Retrieve from Storage |
| MC16889-2.4 | Gary Krasinski | VOC Ref #10 | 12/18/12 09:46 | Return to Storage |

# Accutest Internal Chain of Custody



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 12/14/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16889-3.1 | Walk In Ref #9 | Nick Krasinski | 12/17/12 11:42 | Retrieve from Storage |
| MC16889-3.1 | Nick Krasinski | Walk In Ref #9 | 12/17/12 21:22 | Return to Storage |
| MC16889-3.1 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |
| MC16889-3.1 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16889-3.2 | VOC Ref #10 | Amy Min Yang | 12/21/12 12:37 | Retrieve from Storage |
| MC16889-3.2 | Amy Min Yang | GCMSM | 12/21/12 12:37 | Load on Instrument |
| MC16889-3.4 | VOC Ref #10 | Gary Krasinski | 12/17/12 09:17 | Retrieve from Storage |
| MC16889-3.4 | Gary Krasinski | VOC Ref #10 | 12/18/12 09:46 | Return to Storage |
| MC16889-4.1 | Walk In Ref #9 | Nick Krasinski | 12/17/12 11:42 | Retrieve from Storage |
| MC16889-4.1 | Nick Krasinski | Walk In Ref #9 | 12/17/12 21:22 | Return to Storage |
| MC16889-4.1 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |
| MC16889-4.1 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16889-4.2 | VOC Ref #10 | Amy Min Yang | 12/21/12 12:37 | Retrieve from Storage |
| MC16889-4.2 | Amy Min Yang | GCMSM | 12/21/12 12:37 | Load on Instrument |
| MC16889-4.4 | VOC Ref #10 | Gary Krasinski | 12/17/12 09:17 | Retrieve from Storage |
| MC16889-4.4 | Gary Krasinski | VOC Ref #10 | 12/18/12 09:46 | Return to Storage |
| MC16889-5.1 | Walk In Ref #9 | Nick Krasinski | 12/17/12 11:42 | Retrieve from Storage |
| MC16889-5.1 | Nick Krasinski | Walk In Ref #9 | 12/17/12 21:22 | Retnrn to Storage |
| MC16889-5.1 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |
| MC16889-5.1 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16889-5.2 | VOC Ref #10 | Amy Min Yang | 12/21/12 12:37 | Retrieve from Storage |
| MC16889-5.2 | Amy Min Yang | GCMSM | 12/21/12 12:37 | Load on Instrument |
| MC16889-5.4 | VOC Ref #10 | Gary Krasinski | 12/17/12 09:17 | Retrieve from Storage |
| MC16889-5.4 | Gary Krasinski | VOC Ref #10 | 12/18/12 09:46 | Return to Storage |
| MC16889-6.1 | Walk In Ref #9 | Nick Krasinski | 12/17/12 11:42 | Retrieve from Storage |
| MC16889-6.1 | Nick Krasinski | Walk In Ref #9 | 12/17/12 21:22 | Return to Storage |
| MC16889-6.1 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |
| MC16889-6.1 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16889-6.2 | VOC Ref #10 | Amy Min Yang | 12/21/12 12:37 | Retrieve from Storage |
| MC16889-6.2 | Amy Min Yang | GCMSM | 12/21/12 12:37 | Load on Instrument |
| MC16889-6.4 | VOC Ref #10 | Gary Krasinski | 12/17/12 09:17 | Retrieve from Storage |
| MC16889-6.4 | Gary Krasinski | VOC Ref #10 | 12/18/12 09:46 | Return to Storage |

# Accutest Internal Chain of Custody



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 12/14/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16889-7.2 | VOC Ref #2 | Krysten Dufort | 12/24/12 09:37 | Retrieve from Storage |
| MC16889-7.2 | Krysten Dufort | GCMSN | 12/24/12 09:37 | Load on Instrument |
| MC16889-7.2 | GCMSN | Krysten Dufort | 12/27/12 11:19 | Unload from Instrument |
| MC16889-7.2 | Krysten Dufort | VOC Ref #2 | 12/27/12 13:11 | Return to Storage |
| MC16889-7.4 | VOC Ref #4 | Nick Krasinski | 12/21/12 13:02 | Retrieve from Storage |
| MC16889-7.4 | Nick Krasinski | | 12/21/12 14:24 | Depleted |
| MC16889-8.1 | Walk In Ref #9 | Nick Krasinski | 12/17/12 11:42 | Retrieve from Storage |
| MC16889-8.1 | Nick Krasinski | Walk In Ref #9 | 12/17/12 21:22 | Return to Storage |
| MC16889-8.1 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |
| MC16889-8.1 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16889-8.3 | VOC Ref #10 | Amy Min Yang | 12/26/12 09:39 | Retrieve from Storage |
| MC16889-8.3 | Amy Min Yang | GCMSM | 12/26/12 09:39 | Load on Instrument |
| MC16889-8.4 | VOC Ref #10 | Gary Krasinski | 12/17/12 09:17 | Retrieve from Storage |
| MC16889-8.4 | Gary Krasinski | VOC Ref #10 | 12/18/12 09:46 | Return to Storage |
| MC16889-9.1 | Walk In Ref #9 | Nick Krasinski | 12/17/12 11:42 | Retrieve from Storage |
| MC16889-9.1 | Nick Krasinski | Walk In Ref #9 | 12/17/12 21:22 | Return to Storage |
| MC16889-9.1 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |
| MC16889-9.1 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16889-9.2 | VOC Ref #10 | Amy Min Yang | 12/26/12 09:39 | Retrieve from Storage |
| MC16889-9.2 | Amy Min Yang | GCMSM | 12/26/12 09:39 | Load on Instrument |
| MC16889-9.4 | VOC Ref #10 | Gary Krasinski | 12/17/12 09:17 | Retrieve from Storage |
| MC16889-9.4 | Gary Krasinski | VOC Ref #10 | 12/18/12 09:46 | Return to Storage |
| MC16889-10.1 | Walk In Ref #9 | Nick Krasinski | 12/17/12 11:42 | Retrieve from Storage |
| MC16889-10.1 | Nick Krasinski | Walk In Ref #9 | 12/17/12 21:22 | Return to Storage |
| MC16889-10.1 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |
| MC16889-10.1 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16889-10.3 | VOC Ref #10 | Amy Min Yang | 12/26/12 09:39 | Retrieve from Storage |
| MC16889-10.3 | Amy Min Yang | GCMSM | 12/26/12 09:39 | Load on Instrument |
| MC16889-10.4 | VOC Ref #10 | Gary Krasinski | 12/17/12 09:17 | Retrieve from Storage |
| MC16889-10.4 | Gary Krasinski | VOC Ref #10 | 12/17/12 09:42 | Return to Storage |
| MC16889-11.1 | Walk In Ref #9 | Nick Krasinski | 12/17/12 11:42 | Retrieve from Storage |
| MC16889-11.1 | Nick Krasinski | Walk In Ref #9 | 12/17/12 21:22 | Return to Storage |
| MC16889-11.1 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |

# Accutest Internal Chain of Custody

Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 12/14/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16889-11.1 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16889-11.2 | VOC Ref #10 | Amy Min Yang | 12/26/12 09:39 | Retrieve from Storage |
| MC16889-11.2 | Amy Min Yang | GCMSM | 12/26/12 09:39 | Load on Instrument |
| MC16889-11.4 | VOC Ref #10 | Gary Krasinski | 12/17/12 09:17 | Retrieve from Storage |
| MC16889-11.4 | Gary Krasinski | VOC Ref #10 | 12/18/12 09:46 | Return to Storage |
| MC16889-12.1 | Walk In Ref #9 | Nick Krasinski | 12/17/12 11:42 | Retrieve from Storage |
| MC16889-12.1 | Nick Krasinski | Walk In Ref #9 | 12/17/12 21:22 | Return to Storage |
| MC16889-12.1 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |
| MC16889-12.1 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16889-12.2 | Walk In Ref #9 | Nick Krasinski | 12/17/12 11:42 | Retrieve from Storage |
| MC16889-12.2 | Nick Krasinski | Walk In Ref #9 | 12/17/12 21:22 | Return to Storage |
| MC16889-12.2 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |
| MC16889-12.2 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16889-12.3 | Walk In Ref #9 | Nick Krasinski | 12/17/12 11:42 | Retrieve from Storage |
| MC16889-12.3 | Nick Krasinski | Walk In Ref #9 | 12/17/12 21:22 | Return to Storage |
| MC16889-12.3 | Walk In Ref #9 | Nick Krasiuski | 12/18/12 21:45 | Retrieve from Storage |
| MC16889-12.3 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16889-12.7 | VOC Ref #10 | Amy Min Yang | 12/26/12 09:39 | Retrieve from Storage |
| MC16889-12.7 | Amy Min Yang | GCMSM | 12/26/12 09:39 | Load on Instrument |
| MC16889-12.8 | VOC Ref #10 | Amy Min Yang | 12/26/12 09:39 | Retrieve from Storage |
| MC16889-12.8 | Amy Min Yang | GCMSM | 12/26/12 09:39 | Load on Instrument |
| MC16889-12.9 | VOC Ref #10 | Amy Min Yang | 12/26/12 09:39 | Retrieve from Storage |
| MC16889-12.9 | Amy Min Yaug | GCMSM | 12/26/12 09:39 | Load on Instrument |
| MC16889-12.11 | VOC Ref #10 | Gary Krasinski | 12/17/12 09:17 | Retrieve from Storage |
| MC16889-12.11 | Gary Krasinski | VOC Ref #10 | 12/18/12 09:46 | Retnrn to Storage |
| MC16889-13.1 | Walk In Ref #9 | Nick Krasinski | 12/17/12 11:42 | Retrieve from Storage |
| MC16889-13.1 | Nick Krasinski | Walk In Ref #9 | 12/17/12 21:22 | Return to Storage |
| MC16889-13.1 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |
| MC16889-13.1 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Retnrn to Storage |
| MC16889-13.2 | VOC Ref #10 | Amy Min Yang | 12/26/12 09:39 | Retrieve from Storage |
| MC16889-13.2 | Amy Min Yang | GCMSM | 12/26/12 09:39 | Load on Instrnment |
| MC16889-13.4 | VOC Ref #10 | Gary Krasinski | 12/17/12 09:17 | Retrieve from Storage |

# Accutest Internal Chain of Custody



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 12/14/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16889-13.4 | Gary Krasinski | VOC Ref #10 | 12/18/12 09:46 | Return to Storage |
| MC16889-14.1 | Walk In Ref #9 | Nick Krasinski | 12/17/12 11:42 | Retrieve from Storage |
| MC16889-14.1 | Nick Krasinski | Walk In Ref #9 | 12/17/12 21:22 | Return to Storage |
| MC16889-14.1 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |
| MC16889-14.1 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16889-14.2 | VOC Ref #10 | Amy Min Yang | 12/27/12 16:57 | Retrieve from Storage |
| MC16889-14.2 | Amy Min Yang | GCMSM | 12/27/12 16:57 | Load on Instrument |
| MC16889-14.3 | VOC Ref #10 | Amy Min Yang | 12/26/12 09:39 | Retrieve from Storage |
| MC16889-14.3 | Amy Min Yang | GCMSM | 12/26/12 09:39 | Load on Instrument |
| MC16889-14.4 | VOC Ref #10 | Gary Krasinski | 12/17/12 09:17 | Retrieve from Storage |
| MC16889-14.4 | Gary Krasinski | VOC Ref #10 | 12/18/12 09:46 | Return to Storage |

New England ACCUTEST LABORATORIES

## GC/MS Volatiles

6

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1801-MB | M53045.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-1, MC16889-2, MC16889-3, MC16889-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 25 | 1.3 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.29 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.37 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 2.0 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.52 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.88 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.16 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.73 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.28 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 1.3 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 2.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.52 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.46 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.23 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.30 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzeue | ND | 2.0 | 0.22 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.23 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.21 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.27 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.29 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.37 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.37 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.23 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.87 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropeue | ND | 5.0 | 0.26 | ug/kg | |

# Method Blank Summary

Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1801-MB | M53045.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-1, MC16889-2, MC16889-3, MC16889-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 0.17 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.50 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.68 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.24 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 0.46 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 0.50 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.29 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.50 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.49 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 1.2 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 1.3 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 1.0 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.23 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.43 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.23 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.85 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 0.24 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 0.23 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.31 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.73 | ug/kg | |
| 79-01-6 | Tricbloroethene | ND | 2.0 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.30 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.29 | ng/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.22 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.21 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 0.56 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.27 | ng/kg | |
| | m,p-Xylene | ND | 2.0 | 0.79 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.24 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.24 | ng/kg | |

# Method Blank Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1801-MB | M53045.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-1, MC16889-2, MC16889-3, MC16889-4

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 80% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/kg | |

# Method Blank Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2685-MB | N71414.D | 1 | 12/24/12 | KD | n/a | n/a | MSN2685 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-7

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 3.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.2 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.24 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.62 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.3 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.58 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.78 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.4 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.61 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.55 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.64 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.61 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.87 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.47 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.50 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 1.3 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.50 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.73 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.65 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.48 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.53 | ug/l | |
| 95-50-1 | 1,2-Dichlorohenzene | ND | 1.0 | 0.93 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.45 | ug/l | |
| 106-46-7 | 1,4-Dichlorobeuzene | ND | 1.0 | 0.64 | ug/l | |
| 75-71-8 | Dichlorodifluoromethaue | ND | 2.0 | 1.7 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.62 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 75-35-4 | 1,1-Dichloroetheue | ND | 1.0 | 0.41 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.95 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.72 | ug/l | |
| 142-28-9 | 1,3-Dichloropropaue | ND | 5.0 | 0.64 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 1.6 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.91 | ug/l | |

# Method Blank Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2685-MB | N71414.D | 1 | 12/24/12 | KD | n/a | n/a | MSN2685 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-7

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.45 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.20 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 15 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.81 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.51 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 2.1 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.50 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.57 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.41 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 2.9 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.1 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.83 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.58 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.45 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.57 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.60 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.42 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.51 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.85 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.50 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.78 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.29 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.85 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.35 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.47 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.3 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.63 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.73 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.58 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.58 | ug/l | |

# Method Blank Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2685-MB | N71414.D | I | 12/24/12 | KD | n/a | n/a | MSN2685 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-7

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | 70-130% |
| 2037-26-5 | Toluene-D8 | 102% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 115% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

# Method Blank Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1803-MB | M53095.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-5, MC16889-6, MC16889-8, MC16889-9, MC16889-10, MC16889-11, MC16889-12, MC16889-13

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 25 | 1.3 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.29 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.37 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 2.0 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.52 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.88 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.16 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.73 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.28 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 1.3 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 2.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.52 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.46 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.23 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.30 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.22 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.23 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.21 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.27 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.29 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.37 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.37 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.23 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.87 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.26 | ug/kg | |

# Method Blank Summary

Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1803-MB | M53095.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-5, MC16889-6, MC16889-8, MC16889-9, MC16889-10, MC16889-11, MC16889-12, MC16889-13

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 0.17 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.50 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.68 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.24 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 0.46 | ng/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 0.50 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.29 | ng/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.50 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.49 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 1.2 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 1.3 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 1.0 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.23 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.43 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.23 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.85 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 0.24 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 0.23 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.31 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.73 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.30 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.29 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.22 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.21 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 0.56 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.27 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.79 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.24 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.24 | ug/kg | |

# Method Blank Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1803-MB | M53095.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-5, MC16889-6, MC16889-8, MC16889-9, MC16889-10, MC16889-11, MC16889-12, MC16889-13

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 80% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/kg | |

# Method Blank Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1804-MB | M53121.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-14

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 25 | 1.3 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.29 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.37 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 2.0 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.52 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.88 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.16 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.73 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.28 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 1.3 | ng/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 2.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.52 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.46 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.23 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.30 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.22 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.23 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.21 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.27 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.29 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.37 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.37 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.23 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.87 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropeue | ND | 5.0 | 0.26 | ug/kg | |

# Method Blank Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1804-MB | M53I21.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-14

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 0.17 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.50 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.68 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.24 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 0.46 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 0.50 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.29 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.50 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.49 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 1.2 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 1.3 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 1.0 | ng/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.23 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.43 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.23 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.85 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 0.24 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 0.23 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.31 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.73 | ng/kg | |
| 79-01-6 | Trichloroetbene | ND | 2.0 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluorometbane | ND | 2.0 | 0.30 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.29 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.22 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.21 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 0.56 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.27 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.79 | ng/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.24 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.24 | ug/kg | |

# Method Blank Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1804-MB | M53121.D | 1 | 12/27/12 | AMY | n/a | n/a | MSMI804 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-14

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 81% | 70-130% |
| 2037-26-5 | Toluene-D8 | 87% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 79% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/kg | |

# Blank Spike Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1801-BS | M53043.D | 1 | 12/21/12 | AMY | n/a | n/a | MSMI801 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-1, MC16889-2, MC16889-3, MC16889-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 37.5 | 75 | 70-130 |
| 107-02-8 | Acrolein | 250 | 118 | 47* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 55.1 | 110 | 70-130 |
| 71-43-2 | Benzene | 50 | 50.9 | 102 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 47.4 | 95 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 49.0 | 98 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 47.4 | 95 | 70-130 |
| 75-25-2 | Bromoform | 50 | 46.9 | 94 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 55.4 | 111 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 52.0 | 104 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 54.1 | 108 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 51.0 | 102 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 49.7 | 99 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 61.1 | 122 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 56.9 | 114 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 46.4 | 93 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 58.4 | 117 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 50.3 | 101 | 10-160 |
| 67-66-3 | Chloroform | 50 | 50.2 | 100 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 62.6 | 125 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 46.9 | 94 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 48.2 | 96 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 46.1 | 92 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 44.6 | 89 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 46.5 | 93 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 46.8 | 94 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 63.6 | 127 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 53.7 | 107 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 48.7 | 97 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 59.9 | 120 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 49.5 | 99 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 54.4 | 109 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 47.7 | 95 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 47.9 | 96 | 70-130 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 56.0 | 112 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 57.1 | 114 | 70-130 |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1801-BS | M53043.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-1, MC16889-2, MC16889-3, MC16889-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 47.2 | 94 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 50.3 | 101 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 291 | 116 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 54.8 | 110 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 51.0 | 102 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 54.0 | 108 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 65.7 | 131* a | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 49.8 | 100 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 54.8 | 110 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 46.7 | 93 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 60.8 | 122 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 49.2 | 98 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 46.5 | 93 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 61.1 | 122 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 49.6 | 99 | 70-130 |
| 100-42-5 | Styrene | 50 | 47.4 | 95 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 47.1 | 94 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 50.1 | 100 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 55.3 | 111 | 70-130 |
| 108-88-3 | Toluene | 50 | 53.3 | 107 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 49.9 | 100 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 50.3 | 101 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 55.5 | 111 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 48.1 | 96 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 53.7 | 107 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 62.8 | 126 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 53.3 | 107 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 49.6 | 99 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 50.3 | 101 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 41.8 | 84 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 58.7 | 117 | 70-130 |
| | m,p-Xylene | 100 | 101 | 101 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 48.4 | 97 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 149 | 99 | 70-130 |

* = Outside of Control Limits.

6.2.1

# Blank Spike Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1801-BS | M53043.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-1, MC16889-2, MC16889-3, MC16889-4

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | 70-130% |
| 2037-26-5 | Toluene-D8 | 89% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 82% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2685-BS | N71412.D | 1 | 12/24/12 | KD | n/a | n/a | MSN2685 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-7

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 44.3 | 89 | 70-130 |
| 107-02-8 | Acrolein | 250 | 114 | 46* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 232 | 464* b | 70-130 |
| 71-43-2 | Benzene | 50 | 48.6 | 97 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 49.1 | 98 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 49.6 | 99 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 50.9 | 102 | 70-130 |
| 75-25-2 | Bromoform | 50 | 51.1 | 102 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 45.7 | 91 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 45.9 | 92 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 46.1 | 92 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 46.3 | 93 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 45.8 | 92 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 47.2 | 94 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 42.8 | 86 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 48.0 | 96 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 49.1 | 98 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 49.5 | 99 | 70-130 |
| 67-66-3 | Chloroform | 50 | 48.7 | 97 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 48.5 | 97 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 44.2 | 88 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 46.4 | 93 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 54.3 | 109 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 45.2 | 90 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 45.0 | 90 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 47.1 | 94 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 34.7 | 69* a | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 49.7 | 99 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 48.1 | 96 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 48.2 | 96 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 48.0 | 96 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 47.4 | 95 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 49.5 | 99 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 48.7 | 97 | 70-130 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 40.2 | 80 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 47.2 | 94 | 70-130 |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2685-BS | N71412.D | 1 | 12/24/12 | KD | n/a | n/a | MSN2685 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-7

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 43.6 | 87 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 45.3 | 91 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 265 | 106 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 43.9 | 88 | 77-137 |
| 100-41-4 | Ethylbenzene | 50 | 50.0 | 100 | 70-130 |
| 87-68-3 | Hexachlorohntadiene | 50 | 46.8 | 94 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 51.2 | 102 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 46.0 | 92 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 49.6 | 99 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 41.1 | 82 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 46.5 | 93 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 50.1 | 100 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 48.6 | 97 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 46.7 | 93 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 46.0 | 92 | 70-130 |
| 100-42-5 | Styrene | 50 | 48.1 | 96 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 52.8 | 106 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 47.4 | 95 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 53.5 | 107 | 70-130 |
| 108-88-3 | Toluene | 50 | 48.4 | 97 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 46.8 | 94 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 47.2 | 94 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 43.8 | 88 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 49.4 | 99 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 46.7 | 93 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 48.8 | 98 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 48.1 | 96 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 47.2 | 94 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 46.5 | 93 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 47.2 | 94 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 40.2 | 80 | 70-130 |
| | m,p-Xylene | 100 | 96.9 | 97 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 48.1 | 96 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 145 | 97 | 70-130 |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2685-BS | N71412.D | 1 | 12/24/12 | KD | n/a | n/a | MSN2685 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-7

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 104% | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 103% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1803-BS | M53092.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |
| MSM1803-BSD | M53093.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-5, MC16889-6, MC16889-8, MC16889-9, MC16889-10, MC16889-11, MC16889-12, MC16889-13

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 33.5 | 67* a | 36.8 | 74 | 9 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 157 | 63* a | 135 | 54* a | 15 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 40.1 | 80 | 42.9 | 86 | 7 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 46.5 | 93 | 47.0 | 94 | 1 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 46.7 | 93 | 45.7 | 91 | 2 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 45.7 | 91 | 47.7 | 95 | 4 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 45.7 | 91 | 46.5 | 93 | 2 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 45.8 | 92 | 46.7 | 93 | 2 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 46.9 | 94 | 50.4 | 101 | 7 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 47.3 | 95 | 45.8 | 92 | 3 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 50.8 | 102 | 50.5 | 101 | 1 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 48.5 | 97 | 47.4 | 95 | 2 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 48.0 | 96 | 47.1 | 94 | 2 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 51.8 | 104 | 56.2 | 112 | 8 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 52.3 | 105 | 53.1 | 106 | 2 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 45.6 | 91 | 45.1 | 90 | 1 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 48.4 | 97 | 51.8 | 104 | 7 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 44.1 | 88 | 43.9 | 88 | 0 | 10-160/25 |
| 67-66-3 | Chloroform | 50 | 46.2 | 92 | 48.1 | 96 | 4 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 47.1 | 94 | 49.7 | 99 | 5 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 45.0 | 90 | 44.1 | 88 | 2 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 46.6 | 93 | 45.6 | 91 | 2 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 45.0 | 90 | 46.0 | 92 | 2 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzeue | 50 | 44.7 | 89 | 43.4 | 87 | 3 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 46.2 | 92 | 44.5 | 89 | 4 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 46.2 | 92 | 45.4 | 91 | 2 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 42.1 | 84 | 40.9 | 82 | 3 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 47.3 | 95 | 49.3 | 99 | 4 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethaue | 50 | 44.3 | 89 | 46.2 | 92 | 4 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 52.6 | 105 | 55.6 | 111 | 6 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 45.2 | 90 | 46.9 | 94 | 4 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 48.7 | 97 | 51.4 | 103 | 5 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 43.3 | 87 | 44.4 | 89 | 3 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 44.0 | 88 | 45.3 | 91 | 3 | 70-130/25 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 51.2 | 102 | 52.4 | 105 | 2 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 52.3 | 105 | 52.5 | 105 | 0 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1803-BS | M53092.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |
| MSM1803-BSD | M53093.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-5, MC16889-6, MC16889-8, MC16889-9, MC16889-10, MC16889-11, MC16889-12, MC16889-13

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 44.2 | 88 | 44.7 | 89 | 1 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 47.2 | 94 | 48.3 | 97 | 2 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 253 | 101 | 293 | 117 | 15 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 50.4 | 101 | 50.8 | 102 | 1 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 50 | 49.2 | 98 | 48.9 | 98 | 1 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 53.1 | 106 | 52.2 | 104 | 2 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 55.4 | 111 | 59.3 | 119 | 7 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 47.3 | 95 | 46.5 | 93 | 2 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 52.2 | 104 | 51.5 | 103 | 1 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 43.2 | 86 | 44.7 | 89 | 3 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 51.1 | 102 | 54.4 | 109 | 6 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 45.4 | 91 | 47.4 | 95 | 4 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 41.4 | 83 | 43.6 | 87 | 5 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 57.8 | 116 | 55.5 | 111 | 4 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 47.4 | 95 | 46.6 | 93 | 2 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 46.6 | 93 | 46.4 | 93 | 0 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 45.8 | 92 | 45.9 | 92 | 0 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 45.4 | 91 | 46.8 | 94 | 3 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 53.7 | 107 | 54.1 | 108 | 1 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 49.8 | 100 | 50.0 | 100 | 0 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 50.0 | 100 | 48.3 | 97 | 3 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 49.9 | 100 | 49.1 | 98 | 2 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 50.5 | 101 | 52.2 | 104 | 3 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 44.0 | 88 | 45.6 | 91 | 4 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 50.2 | 100 | 49.6 | 99 | 1 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 54.8 | 110 | 57.3 | 115 | 4 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 47.9 | 96 | 49.4 | 99 | 3 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 48.3 | 97 | 47.2 | 94 | 2 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 48.3 | 97 | 47.8 | 96 | 1 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 45.7 | 91 | 45.7 | 91 | 0 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 47.2 | 94 | 48.4 | 97 | 3 | 70-130/25 |
| | m,p-Xylene | 100 | 97.1 | 97 | 97.4 | 97 | 0 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 46.9 | 94 | 46.2 | 92 | 2 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 144 | 96 | 144 | 96 | 0 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1803-BS | M53092.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |
| MSM1803-BSD | M53093.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-5, MC16889-6, MC16889-8, MC16889-9, MC16889-10, MC16889-11, MC16889-12, MC16889-13

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | 86% | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | 88% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 82% | 80% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1804-BS | M53118.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| MSM1804-BSD | M53119.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-14

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 36.1 | 72 | 34.9 | 70 | 3 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 140 | 56* a | 115 | 46* a | 20 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 44.4 | 89 | 46.7 | 93 | 5 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 46.0 | 92 | 48.1 | 96 | 4 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 44.3 | 89 | 46.3 | 93 | 4 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 45.0 | 90 | 47.4 | 95 | 5 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 44.4 | 89 | 46.8 | 94 | 5 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 44.6 | 89 | 45.7 | 91 | 2 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 45.9 | 92 | 49.2 | 98 | 7 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 48.1 | 96 | 43.4 | 87 | 10 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 50.9 | 102 | 51.9 | 104 | 2 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 48.6 | 97 | 49.9 | 100 | 3 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 47.1 | 94 | 49.1 | 98 | 4 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 51.3 | 103 | 54.9 | 110 | 7 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 52.2 | 104 | 55.6 | 111 | 6 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 44.5 | 89 | 45.5 | 91 | 2 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 48.1 | 96 | 51.6 | 103 | 7 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 49.0 | 98 | 47.3 | 95 | 4 | 10-160/25 |
| 67-66-3 | Chloroform | 50 | 45.7 | 91 | 48.3 | 97 | 6 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 44.4 | 89 | 48.4 | 97 | 9 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 43.9 | 88 | 45.2 | 90 | 3 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 45.0 | 90 | 46.4 | 93 | 3 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 43.9 | 88 | 45.4 | 91 | 3 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 43.0 | 86 | 44.1 | 88 | 3 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 44.7 | 89 | 45.4 | 91 | 2 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 44.7 | 89 | 46.5 | 93 | 4 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 37.6 | 75 | 38.6 | 77 | 3 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 47.0 | 94 | 49.4 | 99 | 5 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 44.0 | 88 | 45.9 | 92 | 4 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 52.3 | 105 | 55.4 | 111 | 6 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 44.9 | 90 | 47.0 | 94 | 5 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 48.7 | 97 | 51.5 | 103 | 6 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 42.7 | 85 | 44.9 | 90 | 5 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 42.6 | 85 | 44.5 | 89 | 4 | 70-130/25 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 51.0 | 102 | 53.8 | 108 | 5 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 51.7 | 103 | 54.6 | 109 | 5 | 70-130/25 |

* = Outside of Control Limits.

6.3.2

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1804-BS | M53118.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| MSM1804-BSD | M53119.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-14

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 43.0 | 86 | 44.7 | 89 | 4 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 45.7 | 91 | 47.8 | 96 | 4 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 248 | 99 | 262 | 105 | 5 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 49.5 | 99 | 50.1 | 100 | 1 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 50 | 48.1 | 96 | 49.6 | 99 | 3 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 53.0 | 106 | 54.4 | 109 | 3 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 51.9 | 104 | 54.4 | 109 | 5 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 46.7 | 93 | 48.3 | 97 | 3 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 52.0 | 104 | 53.8 | 108 | 3 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 41.1 | 82 | 43.3 | 87 | 5 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 49.6 | 99 | 50.5 | 101 | 2 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 44.6 | 89 | 46.4 | 93 | 4 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 40.8 | 82 | 43.0 | 86 | 5 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 54.9 | 110 | 54.4 | 109 | 1 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 46.5 | 93 | 48.6 | 97 | 4 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 45.1 | 90 | 46.7 | 93 | 3 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 45.6 | 91 | 46.6 | 93 | 2 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 44.0 | 88 | 46.3 | 93 | 5 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 53.2 | 106 | 55.6 | 111 | 4 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 49.0 | 98 | 51.7 | 103 | 5 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 47.4 | 95 | 47.8 | 96 | 1 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 48.2 | 96 | 48.3 | 97 | 0 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 51.2 | 102 | 54.0 | 108 | 5 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 43.7 | 87 | 45.1 | 90 | 3 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 49.6 | 99 | 52.1 | 104 | 5 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 54.7 | 109 | 58.6 | 117 | 7 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 46.5 | 93 | 47.7 | 95 | 3 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 47.2 | 94 | 49.2 | 98 | 4 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 47.5 | 95 | 49.6 | 99 | 4 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 42.0 | 84 | 39.9 | 80 | 5 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 45.8 | 92 | 48.7 | 97 | 6 | 70-130/25 |
| | m,p-Xylene | 100 | 95.9 | 96 | 99.0 | 99 | 3 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 45.7 | 91 | 47.5 | 95 | 4 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 142 | 95 | 146 | 97 | 3 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1804-BS | M53118.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| MSM1804-BSD | M53119.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-14

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 86% | 84% | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | 87% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 81% | 80% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16889-1MS | M53064.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| MC16889-1MSD | M53065.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| MC16889-1 | M53059.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-1, MC16889-2, MC16889-3, MC16889-4

| CAS No. | Compound | MC16889-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 52.8 | 40.1 | 76 | 78.5 | 154* a | 65* b | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 264 | 52.8 | 20* a | 59.6 | 23* a | 12 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 52.8 | 22.2 | 42* a | 41.5 | 82 | 61* b | 70-130/30 |
| 71-43-2 | Benzene | ND | | 52.8 | 13.5 | 26* a | 34.9 | 69* a | 88* b | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 52.8 | 7.5 | 14* a | 26.9 | 53* a | 113* b | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 52.8 | 20.1 | 38* a | 37.3 | 73 | 60* b | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 52.8 | 15.4 | 29* a | 34.8 | 68* a | 77* b | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 52.8 | 15.4 | 29* a | 33.1 | 65* a | 73* b | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 52.8 | 21.6 | 41* a | 44.4 | 87 | 69* b | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 52.8 | 22.3 | 42* a | 45.0 | 88 | 67* b | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 52.8 | 2.7 | 5* a | 24.0 | 47* a | 160* b | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 52.8 | 2.8 | 5* a | 23.7 | 47* a | 158* b | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 52.8 | 2.9 | 5* a | 23.0 | 45* a | 155* b | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 52.8 | 19.5 | 37* a | 44.4 | 87 | 78* b | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 52.8 | 10 | 19* a | 35.6 | 70 | 112* b | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 52.8 | 8.7 | 16* a | 28.4 | 56* a | 106* b | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 52.8 | 20.5 | 39* a | 45.4 | 89 | 76* b | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 52.8 | ND | 0* a | ND | 0* a | nc | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 52.8 | 16.1 | 31* a | 35.6 | 70 | 75* b | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 52.8 | 23.4 | 44* a | 47.7 | 94 | 68* b | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 52.8 | 4.5 | 9* a | 23.4 | 46* a | 135* b | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 52.8 | 4.6 | 9* a | 24.1 | 47* a | 136* b | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 52.8 | 15.7 | 30* a | 33.3 | 65* a | 72* b | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 52.8 | 4.8 | 9* a | 22.7 | 45* a | 130* b | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 52.8 | 4.5 | 9* a | 23.3 | 46* a | 135* b | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 52.8 | 4.7 | 9* a | 23.5 | 46* a | 133* b | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 52.8 | 15.0 | 28* a | 43.2 | 85 | 97* b | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 52.8 | 16.5 | 31* a | 37.5 | 74 | 78* b | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 52.8 | 18.8 | 36* a | 36.1 | 71 | 63* b | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 52.8 | 17.8 | 34* a | 44.0 | 86 | 85* b | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 52.8 | 16.6 | 31* a | 35.5 | 70 | 73* b | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 52.8 | 17.4 | 33* a | 39.6 | 78 | 78* b | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 52.8 | 13.9 | 26* a | 33.0 | 65* a | 81* b | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 52.8 | 15.6 | 30* a | 33.2 | 65* a | 72* b | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 52.8 | 11.9 | 23* a | 37.1 | 73 | 103* b | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 52.8 | 11.6 | 22* a | 36.4 | 72 | 103* b | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16889-1MS | M53064.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| MC16889-1MSD | M53065.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| MC16889-1 | M53059.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-1, MC16889-2, MC16889-3, MC16889-4

| CAS No. | Compound | MC16889-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 52.8 | 14.0 | 27* a | 31.5 | 62* a | 77* b | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 52.8 | 15.9 | 30* a | 34.0 | 67* a | 73* b | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 264 | 90.9 | 34* a | 290 | 114 | 105* b | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 52.8 | 14.8 | 28* a | 33.3 | 65 | 77* b | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 52.8 | 5.8 | 11* a | 28.2 | 55* a | 132* b | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 52.8 | 2.6 | 5* a | 24.4 | 48* a | 161* b | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 52.8 | 18.7 | 35* a | 40.2 | 79 | 73* b | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 52.8 | 3.6 | 7* a | 23.6 | 46* a | 147* b | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 52.8 | 2.9 | 5* a | 25.4 | 50* a | 159* b | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 52.8 | 15.4 | 29* a | 29.3 | 58* a | 62* b | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 52.8 | 19.5 | 37* a | 40.7 | 80 | 70* b | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 52.8 | 19.7 | 37* a | 37.2 | 73 | 62* b | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 52.8 | 18.8 | 36* a | 36.2 | 71 | 63* b | 70-130/30 |
| 91-20-3 | Naphthalene | 16.5 | | 52.8 | 3.9 | -24* a | 17.4 | 2* a | 127* b | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 52.8 | 3.4 | 6* a | 23.9 | 47* a | 150* b | 70-130/30 |
| 100-42-5 | Styrene | ND | | 52.8 | ND | 0* a | 3.1 | 6* a | 200* b | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 52.8 | 9.5 | 18* a | 30.1 | 59* a | 104* b | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 52.8 | 14.7 | 28* a | 34.5 | 68* a | 80* b | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 52.8 | 6.6 | 13* a | 31.1 | 61* a | 130* b | 70-130/30 |
| 108-88-3 | Toluene | 1.3 | J | 52.8 | 10.3 | 17* a | 33.4 | 63* a | 106* b | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 52.8 | 3.1 | 6* a | 19.6 | 39* a | 145* b | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 52.8 | 3.1 | 6* a | 19.1 | 38* a | 144* b | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 52.8 | 11.7 | 22* a | 35.9 | 71 | 102* b | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 52.8 | 16.1 | 31* a | 33.9 | 67* a | 71* b | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 52.8 | 12.3 | 23* a | 34.6 | 68* a | 95* b | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 52.8 | 14.1 | 27* a | 42.1 | 83 | 100* b | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 52.8 | 14.9 | 28* a | 34.5 | 68* a | 79* b | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 52.8 | 2.7 | 5* a | 21.7 | 43* a | 156* b | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 52.8 | 4.0 | 8* a | 25.8 | 51* a | 146* b | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 52.8 | 6.7 | 13* a | 16.6 | 33* a | 85* b | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 52.8 | 21.0 | 40* a | 42.9 | 84 | 69* b | 70-130/30 |
| | m,p-Xylene | 2.3 | J | 106 | 11.3 | 9* a | 54.0 | 51* a | 131* b | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 52.8 | 5.7 | 11* a | 26.0 | 51* a | 128* b | 70-130/30 |
| 1330-20-7 | Xylene (total) | 2.3 | J | 158 | 17.0 | 9* a | 80.0 | 51* a | 130* b | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16889-1MS | M53064.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| MC16889-1MSD | M53065.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |
| MC16889-1 | M53059.D | 1 | 12/21/12 | AMY | n/a | n/a | MSM1801 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-1, MC16889-2, MC16889-3, MC16889-4

| CAS No. | Surrogate Recoveries | MS | MSD | MC16889-1 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | 83% | 79% | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | 88% | 90% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 80% | 82% | 83% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) High RPD due to possible matrix interference and/or sample non-homogeneity.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16880-6MS | N71433.D | 1 | 12/24/12 | KD | n/a | n/a | MSN2685 |
| MC16880-6MSD | N71434.D | 1 | 12/24/12 | KD | n/a | n/a | MSN2685 |
| MC16880-6 | N71421.D | 1 | 12/24/12 | KD | n/a | n/a | MSN2685 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-7

| CAS No. | Compound | MC16880-6 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 50 | 46.1 | 92 | 44.1 | 88 | 4 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 250 | 95.5 | 38* [a] | 102 | 41* [a] | 7 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 50 | 208 | 416* [b] | 212 | 424* [b] | 2 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 50 | 47.8 | 96 | 47.1 | 94 | 1 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 50 | 46.1 | 92 | 45.6 | 91 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 50 | 48.8 | 98 | 48.2 | 96 | 1 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 50 | 48.9 | 98 | 48.3 | 97 | 1 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 50 | 46.1 | 92 | 45.2 | 90 | 2 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 50 | 41.8 | 84 | 53.2 | 106 | 24 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 50 | 39.3 | 79 | 38.8 | 78 | 1 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 50 | 42.2 | 84 | 42.2 | 84 | 0 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 50 | 43.8 | 88 | 43.5 | 87 | 1 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 50 | 44.1 | 88 | 43.7 | 87 | 1 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 50 | 47.8 | 96 | 46.7 | 93 | 2 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 50 | 41.0 | 82 | 41.5 | 83 | 1 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 50 | 45.7 | 91 | 46.1 | 92 | 1 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 50 | 49.9 | 100 | 49.8 | 100 | 0 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 50 | 48.6 | 97 | 48.1 | 96 | 1 | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 50 | 48.7 | 97 | 48.3 | 97 | 1 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 50 | 42.6 | 85 | 42.0 | 84 | 1 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 50 | 42.0 | 84 | 41.7 | 83 | 1 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 50 | 43.8 | 88 | 43.8 | 88 | 0 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 50 | 50.2 | 100 | 50.5 | 101 | 1 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 50 | 42.7 | 85 | 43.2 | 86 | 1 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 50 | 42.8 | 86 | 42.6 | 85 | 0 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 50 | 44.1 | 88 | 44.5 | 89 | 1 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 50 | 33.2 | 66* [a] | 33.0 | 66* [a] | 1 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 50 | 49.0 | 98 | 48.9 | 98 | 0 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 50 | 46.6 | 93 | 46.5 | 93 | 0 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 50 | 48.3 | 97 | 47.1 | 94 | 3 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 50 | 46.6 | 93 | 46.1 | 92 | 1 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 50 | 47.4 | 95 | 46.4 | 93 | 2 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 50 | 48.6 | 97 | 48.1 | 96 | 1 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 50 | 45.3 | 91 | 45.6 | 91 | 1 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 50 | 35.7 | 71 | 35.5 | 71 | 1 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 50 | 47.1 | 94 | 48.3 | 97 | 3 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16880-6MS | N71433.D | 1 | 12/24/12 | KD | n/a | n/a | MSN2685 |
| MC16880-6MSD | N71434.D | 1 | 12/24/12 | KD | n/a | n/a | MSN2685 |
| MC16880-6 | N71421.D | 1 | 12/24/12 | KD | n/a | n/a | MSN2685 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-7

| CAS No. | Compound | MC16880-6 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 50 | 40.4 | 81 | 40.0 | 80 | 1 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 50 | 42.0 | 84 | 42.3 | 85 | 1 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 250 | 206 | 82 | 223 | 89 | 8 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 50 | 41.2 | 82 | 40.5 | 81 | 2 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 50 | 48.6 | 97 | 48.5 | 97 | 0 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 50 | 40.6 | 81 | 42.5 | 85 | 5 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 50 | 45.3 | 91 | 44.1 | 88 | 3 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 50 | 44.2 | 88 | 43.7 | 87 | 1 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 50 | 46.9 | 94 | 46.5 | 93 | 1 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 50 | 39.3 | 79 | 38.4 | 77 | 2 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 50 | 41.7 | 83 | 40.9 | 82 | 2 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 50 | 49.1 | 98 | 47.0 | 94 | 4 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 50 | 48.0 | 96 | 47.5 | 95 | 1 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 50 | 39.7 | 79 | 42.1 | 84 | 6 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 50 | 43.9 | 88 | 43.7 | 87 | 0 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 50 | 44.7 | 89 | 45.7 | 91 | 2 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 50 | 50.2 | 100 | 50.5 | 101 | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 50 | 42.9 | 86 | 42.8 | 86 | 0 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 50 | 51.2 | 102 | 51.2 | 102 | 0 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 50 | 48.3 | 97 | 47.7 | 95 | 1 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 50 | 41.3 | 83 | 42.5 | 85 | 3 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 50 | 42.9 | 86 | 42.9 | 86 | 0 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 50 | 43.1 | 86 | 42.3 | 85 | 2 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 50 | 47.1 | 94 | 46.2 | 92 | 2 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 50 | 46.0 | 92 | 45.8 | 92 | 0 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 50 | 47.8 | 96 | 47.2 | 94 | 1 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 50 | 42.8 | 86 | 41.4 | 83 | 3 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 50 | 44.3 | 89 | 43.9 | 88 | 1 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 50 | 44.4 | 89 | 44.2 | 88 | 0 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 50 | 40.0 | 80 | 39.4 | 79 | 2 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 50 | 41.0 | 82 | 40.7 | 81 | 1 | 70-130/30 |
| | m,p-Xylene | ND | | 100 | 92.9 | 93 | 93.1 | 93 | 0 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 50 | 46.6 | 93 | 46.0 | 92 | 1 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 150 | 140 | 93 | 139 | 93 | 1 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16880-6MS | N71433.D | 1 | 12/24/12 | KD | n/a | n/a | MSN2685 |
| MC16880-6MSD | N71434.D | 1 | 12/24/12 | KD | n/a | n/a | MSN2685 |
| MC16880-6 | N71421.D | 1 | 12/24/12 | KD | n/a | n/a | MSN2685 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-7

| CAS No. | Surrogate Recoveries | MS | MSD | MC16880-6 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | 103% | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | 103% | 103% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 103% | 100% | 119% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16889-12MS | M53107.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |
| MC16889-12MSD | M53108.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |
| MC16889-12 | M53106.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-5, MC16889-6, MC16889-8, MC16889-9, MC16889-10, MC16889-11, MC16889-12, MC16889-13

| CAS No. | Compound | MC16889-12 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 158 | | 54.5 | 170 | 22* a | 155 | -6* a | 9 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 272 | 72.9 | 27* b | 92.3 | 34* b | 23 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 54.5 | 28.0 | 51* b | 29.5 | 54* b | 5 | 70-130/30 |
| 71-43-2 | Benzene | 1.4 | | 54.5 | 15.6 | 26* b | 19.8 | 34* b | 24 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 54.5 | 6.4 | 12* b | 16.2 | 30* b | 87* c | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 54.5 | 21.8 | 40* b | 25.7 | 47* b | 16 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 54.5 | 16.8 | 31* b | 20.8 | 38* b | 21 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 54.5 | 16.3 | 30* b | 22.6 | 42* b | 32* c | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 54.5 | 23.8 | 44* b | 26.3 | 48* b | 10 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 54.5 | 42.2 | 77 | 15.2 | 28* b | 94* c | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 54.5 | 1.1 | 2* b | 26.6 | 49* b | 184* c | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 54.5 | 1.2 | 2* b | 25.6 | 47* b | 182* c | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 54.5 | 1.3 | 2* b | 23.9 | 44* b | 179* c | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 54.5 | 17.8 | 33* b | 21.7 | 40* b | 20 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 54.5 | 8.4 | 15* b | 22.2 | 41* b | 90* c | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 54.5 | 8.5 | 16* b | 16.2 | 30* b | 62* c | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 54.5 | 20.2 | 37* b | 24.3 | 45* b | 18 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 54.5 | ND | 0* b | ND | 0* b | nc | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 54.5 | 16.9 | 31* b | 20.6 | 38* b | 20 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 54.5 | 24.2 | 44* b | 28.7 | 53* b | 17 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 54.5 | 2.8 | 5* b | 17.6 | 32* b | 145* c | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 54.5 | 3.0 | 6* b | 17.9 | 33* b | 143* c | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 54.5 | 16.9 | 31* b | 21.8 | 40* b | 25 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 54.5 | 3.0 | 6* b | 16.6 | 31* b | 139* c | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 54.5 | 2.7 | 5* b | 18.1 | 33* b | 148* c | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 54.5 | 3.1 | 6* b | 18.8 | 35* b | 143* c | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 54.5 | 2.6 | 5* b | 31.0 | 57* b | 169* c | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 54.5 | 16.9 | 31* b | 21.0 | 39* b | 22 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 54.5 | 20.7 | 38* b | 24.3 | 45* b | 16 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 54.5 | 15.3 | 28* b | 22.4 | 41* b | 38* c | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 54.5 | 18.1 | 33* b | 20.9 | 39* b | 14 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 54.5 | 17.5 | 32* b | 19.9 | 37* b | 13 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 54.5 | 14.5 | 27* b | 18.9 | 35* b | 26 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 54.5 | 17.1 | 31* b | 21.7 | 40* b | 24 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 54.5 | 11.6 | 21* b | 18.9 | 35* b | 48* c | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 54.5 | 9.8 | 18* b | 19.8 | 36* b | 68* c | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16889-12MS | M53107.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |
| MC16889-12MSD | M53108.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |
| MC16889-12 | M53106.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-5, MC16889-6, MC16889-8, MC16889-9, MC16889-10, MC16889-11, MC16889-12, MC16889-13

| CAS No. | Compound | MC16889-12 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 54.5 | 15.0 | 28* b | 18.5 | 34* b | 21 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 54.5 | 17.0 | 31* b | 21.0 | 39* b | 21 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 272 | 106 | 39* b | 151 | 56* b | 35* c | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 54.5 | 13.4 | 25* b | 17.7 | 33* b | 28 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 2.2 | | 54.5 | 5.8 | 7* b | 20.5 | 34* b | 112* c | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 54.5 | 1.0 | 2* b | 25.4 | 47* b | 185* c | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 54.5 | 20.8 | 38* b | 17.2 | 32* b | 19 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 54.5 | 1.9 | 3* b | 21.9 | 40* b | 168* c | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 54.5 | 1.3 | 2* b | 27.7 | 51* b | 182* c | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 54.5 | 15.3 | 28* b | 18.4 | 34* b | 18 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 54.5 | 18.0 | 33* b | 23.0 | 42* b | 24 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 54.5 | 22.1 | 41* b | 26.5 | 49* b | 18 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 54.5 | 20.2 | 37* b | 23.9 | 44* b | 17 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 54.5 | 2.9 | 5* b | 23.6 | 43* b | 156* c | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 54.5 | 1.8 | 3* b | 22.9 | 42* b | 171* c | 70-130/30 |
| 100-42-5 | Styrene | ND | | 54.5 | 1.8 | 3* b | 9.1 | 17* b | 134* c | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 54.5 | 9.2 | 17* b | 17.8 | 33* b | 64* c | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 54.5 | 14.7 | 27* b | 21.9 | 40* b | 39* c | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 54.5 | 4.7 | 9* b | 21.2 | 39* b | 127* c | 70-130/30 |
| 108-88-3 | Toluene | 3.3 | J | 54.5 | 11.6 | 15* b | 20.1 | 31* b | 54* c | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 54.5 | 1.5 | 3* b | 26.1 | 48* b | 178* c | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 54.5 | 1.3 | 2* b | 27.2 | 50* b | 182* c | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 54.5 | 10.9 | 20* b | 20.7 | 38* b | 62* c | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 54.5 | 17.0 | 31* b | 22.4 | 41* b | 27 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 54.5 | 11.3 | 21* b | 17.1 | 32* b | 41* c | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 54.5 | 8.1 | 15* b | 29.5 | 54* b | 114* c | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 54.5 | 15.3 | 28* b | 22.1 | 41* b | 36* c | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 54.5 | 1.8 | 3* b | 21.9 | 40* b | 170* c | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 54.5 | 4.5 | 8* b | 24.8 | 46* b | 139* c | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 54.5 | 14.3 | 26* b | 20.9 | 39* b | 38* c | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 54.5 | 17.9 | 33* b | 23.8 | 44* b | 28 | 70-130/30 |
| | m,p-Xylene | ND | | 109 | 8.3 | 8* b | 38.6 | 36* b | 129* c | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 54.5 | 4.4 | 8* b | 17.6 | 32* b | 120* c | 70-130/30 |
| 1330-20-7 | Xylene (total) | 0.63 | J | 163 | 12.7 | 7* b | 56.2 | 34* b | 126* c | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16889-12MS | M53107.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |
| MC16889-12MSD | M53108.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |
| MC16889-12 | M53106.D | 1 | 12/26/12 | AMY | n/a | n/a | MSM1803 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-5, MC16889-6, MC16889-8, MC16889-9, MC16889-10, MC16889-11, MC16889-12, MC16889-13

| CAS No. | Surrogate Recoveries | MS | MSD | MC16889-12 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | 84% | 82% | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | 87% | 88% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 82% | 82% | 81% | 70-130% |

(a) Outside control limits due to high level in sample relative to spike amount.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(c) High RPD due to possible matrix interference and/or sample non-homogeneity.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16931-1MS | M53139.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| MC16931-1MSD | M53140.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| MC16931-1 | M53124.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-14

| CAS No. | Compound | MC16931-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 87.8 | 77.6 | 88 | 84.8 | 93 | 9 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 439 | 201 | 46* [a] | 209 | 46* [a] | 4 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 87.8 | 97.6 | 111 | 103 | 113 | 5 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 87.8 | 85.5 | 97 | 90.4 | 99 | 6 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 87.8 | 85.6 | 98 | 88.7 | 97 | 4 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 87.8 | 91.4 | 104 | 96.2 | 105 | 5 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 87.8 | 89.5 | 102 | 92.6 | 101 | 3 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 87.8 | 95.3 | 109 | 98.6 | 108 | 3 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 87.8 | 86.8 | 99 | 93.4 | 102 | 7 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 87.8 | 99.9 | 114 | 108 | 118 | 8 | 70-130/30 |
| 104-51-8 | n-Bntylbenzene | ND | | 87.8 | 80.0 | 91 | 92.6 | 101 | 15 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 87.8 | 78.7 | 90 | 90.1 | 98 | 14 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 87.8 | 78.5 | 89 | 87.8 | 96 | 11 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 87.8 | 92.8 | 106 | 102 | 111 | 9 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 87.8 | 94.6 | 108 | 102 | 111 | 8 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 87.8 | 80.8 | 92 | 87.0 | 95 | 7 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 87.8 | 88.9 | 101 | 95.3 | 104 | 7 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 87.8 | 72.4 | 82 | 90.0 | 98 | 22 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 87.8 | 86.4 | 98 | 92.8 | 101 | 7 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 87.8 | 81.5 | 93 | 88.5 | 97 | 8 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 87.8 | 77.7 | 89 | 83.4 | 91 | 7 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 87.8 | 80.0 | 91 | 86.9 | 95 | 8 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 87.8 | 91.3 | 104 | 94.9 | 104 | 4 | 70-130/30 |
| 95-50-I | 1,2-Dichlorobenzene | ND | | 87.8 | 79.7 | 91 | 85.9 | 94 | 7 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 87.8 | 79.9 | 91 | 85.8 | 94 | 7 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 87.8 | 81.3 | 93 | 87.6 | 96 | 7 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 87.8 | 57.9 | 66* [a] | 62.8 | 69* [a] | 8 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 87.8 | 86.8 | 99 | 93.6 | 102 | 8 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 87.8 | 90.9 | 104 | 94.4 | 103 | 4 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 87.8 | 94.1 | 107 | 103 | 113 | 9 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 87.8 | 84.3 | 96 | 89.8 | 98 | 6 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 87.8 | 88.9 | 101 | 95.3 | 104 | 7 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 87.8 | 82.6 | 94 | 85.9 | 94 | 4 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 87.8 | 88.4 | 101 | 92.2 | 101 | 4 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 87.8 | 90.3 | 103 | 99.0 | 108 | 9 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 87.8 | 94.4 | 108 | 98.7 | 108 | 4 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16931-1MS | M53139.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| MC16931-1MSD | M53140.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| MC16931-1 | M53124.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-14

| CAS No. | Compound | MC16931-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 87.8 | 84.1 | 96 | 87.1 | 95 | 4 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 87.8 | 95.6 | 109 | 96.5 | 105 | 1 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 439 | 539 | 123 | 588 | 128 | 9 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 87.8 | 103 | 117 | 105 | 115 | 2 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 87.8 | 84.5 | 96 | 91.8 | 100 | 8 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 87.8 | 78.2 | 89 | 96.3 | 105 | 21 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 87.8 | 114 | 130 | 116 | 127 | 2 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 87.8 | 79.6 | 91 | 87.6 | 96 | 10 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 87.8 | 84.7 | 96 | 97.1 | 106 | 14 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 87.8 | 86.2 | 98 | 90.9 | 99 | 5 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 87.8 | 110 | 125 | 114 | 125 | 4 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 87.8 | 96.3 | 110 | 97.6 | 107 | 1 | 70-130/30 |
| 75-09-2 | Methylene chloride | 1.5 | J | 87.8 | 80.6 | 90 | 85.9 | 92 | 6 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 87.8 | 88.4 | 101 | 105 | 115 | 17 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 87.8 | 78.4 | 89 | 87.2 | 95 | 11 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 87.8 | 61.3 | 70 | 69.0 | 75 | 12 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 87.8 | 85.8 | 98 | 91.4 | 100 | 6 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 87.8 | 96.6 | 110 | 100 | 109 | 3 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 87.8 | 93.8 | 107 | 101 | 110 | 7 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 87.8 | 90.9 | 104 | 96.3 | 105 | 6 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorohenzene | ND | | 87.8 | 82.7 | 94 | 93.7 | 102 | 12 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 87.8 | 80.9 | 92 | 92.4 | 101 | 13 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 87.8 | 91.3 | 104 | 99.6 | 109 | 9 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 87.8 | 92.0 | 105 | 93.2 | 102 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 87.8 | 91.1 | 104 | 95.8 | 105 | 5 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 87.8 | 98.6 | 112 | 107 | 117 | 8 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 87.8 | 101 | 115 | 104 | 114 | 3 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 87.8 | 78.9 | 90 | 87.6 | 96 | 10 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 87.8 | 81.0 | 92 | 90.6 | 99 | 11 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 87.8 | 79.1 | 90 | 75.0 | 82 | 5 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 87.8 | 80.9 | 92 | 87.9 | 96 | 8 | 70-130/30 |
| | m,p-Xylene | ND | | 176 | 169 | 96 | 183 | 100 | 8 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 87.8 | 81.2 | 92 | 88.7 | 97 | 9 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 263 | 250 | 95 | 272 | 99 | 8 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16931-1MS | M53139.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| MC16931-1MSD | M53140.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| MC16931-1 | M53124.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16889-14

| CAS No. | Surrogate Recoveries | MS | MSD | MC16931-1 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 84% | 84% | 85% | 70-130% |
| 2037-26-5 | Toluene-D8 | 89% | 87% | 87% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 81% | 80% | 80% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

* = Outside of Control Limits.

# Volatile Internal Standard Area Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1801-CC1800 | Injection Date: | 12/21/12 |
| Lab File ID: | M53043.D | Injection Time: | 11:58 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 181618 | 9.36 | 253844 | 10.24 | 128665 | 13.52 | 146551 | 16.08 | 99307 | 6.86 |
| Upper Limit [a] | 363236 | 9.86 | 507688 | 10.74 | 257330 | 14.02 | 293102 | 16.58 | 198614 | 7.36 |
| Lower Limit [b] | 90809 | 8.86 | 126922 | 9.74 | 64333 | 13.02 | 73276 | 15.58 | 49654 | 6.36 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1801-BS | 181618 | 9.36 | 253844 | 10.24 | 128665 | 13.52 | 146551 | 16.08 | 99307 | 6.86 |
| MSM1801-MB | 194908 | 9.36 | 266632 | 10.24 | 128589 | 13.52 | 151743 | 16.09 | 49991 | 6.86 |
| ZZZZZZ | 194294 | 9.36 | 267691 | 10.24 | 129377 | 13.52 | 151188 | 16.09 | 91038 | 6.86 |
| ZZZZZZ | 190628 | 9.36 | 261158 | 10.24 | 127423 | 13.52 | 147811 | 16.08 | 80958 | 6.85 |
| ZZZZZZ | 185568 | 9.36 | 253135 | 10.24 | 123892 | 13.52 | 143566 | 16.09 | 79703 | 6.85 |
| ZZZZZZ | 187170 | 9.36 | 258983 | 10.24 | 126389 | 13.52 | 150640 | 16.09 | 84223 | 6.85 |
| ZZZZZZ | 196284 | 9.36 | 268861 | 10.24 | 129804 | 13.52 | 157775 | 16.09 | 89360 | 6.86 |
| ZZZZZZ | 194273 | 9.36 | 268581 | 10.24 | 129253 | 13.52 | 156324 | 16.09 | 80746 | 6.86 |
| ZZZZZZ | 183563 | 9.36 | 252072 | 10.24 | 117978 | 13.52 | 122212 | 16.09 | 85614 | 6.85 |
| ZZZZZZ | 192938 | 9.36 | 261549 | 10.24 | 122456 | 13.52 | 128865 | 16.09 | 95380 | 6.86 |
| ZZZZZZ | 185650 | 9.36 | 253092 | 10.24 | 122823 | 13.52 | 142623 | 16.08 | 83649 | 6.86 |
| ZZZZZZ | 172892 | 9.36 | 233303 | 10.24 | 116066 | 13.52 | 131517 | 16.09 | 76745 | 6.85 |
| ZZZZZZ | 176885 | 9.36 | 241780 | 10.24 | 117110 | 13.52 | 137019 | 16.09 | 86646 | 6.86 |
| ZZZZZZ | 172805 | 9.36 | 238765 | 10.24 | 117819 | 13.52 | 134295 | 16.09 | 69790 | 6.86 |
| MC16889-1 | 41026[c] | 9.36 | 53912[c] | 10.24 | 26823[c] | 13.52 | 31127[c] | 16.09 | 13531[c] | 6.86 |
| MC16889-2 | 170809 | 9.36 | 231956 | 10.24 | 111955 | 13.52 | 129024 | 16.08 | 59943 | 6.85 |
| MC16889-3 | 181721 | 9.36 | 248542 | 10.24 | 122962 | 13.52 | 141525 | 16.08 | 68958 | 6.86 |
| MC16889-4 | 184822 | 9.36 | 253011 | 10.24 | 124220 | 13.52 | 142639 | 16.08 | 78363 | 6.86 |
| ZZZZZZ | 169863 | 9.36 | 233433 | 10.24 | 112955 | 13.52 | 131826 | 16.08 | 68539 | 6.85 |
| MC16889-1MS | 178686 | 9.36 | 244443 | 10.24 | 120161 | 13.52 | 145251 | 16.08 | 76253 | 6.86 |
| MC16889-1MSD | 87005[c] | 9.36 | 118165[c] | 10.24 | 58978[c] | 13.52 | 69356[c] | 16.08 | 33238[c] | 6.86 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits dne to possible matrix interference. Confirmed by MS/MSD.

# Volatile Internal Standard Area Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1803-CC1800 | Injection Date: | 12/26/12 |
| Lab File ID: | M53091.D | Injection Time: | 07:31 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 183946 | 9.36 | 254289 | 10.24 | 126305 | 13.52 | 142217 | 16.08 | 42636 | 6.86 |
| Upper Limit [a] | 367892 | 9.86 | 508578 | 10.74 | 252610 | 14.02 | 284434 | 16.58 | 85272 | 7.36 |
| Lower Limit [b] | 91973 | 8.86 | 127145 | 9.74 | 63153 | 13.02 | 71109 | 15.58 | 21318 | 6.36 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1803-BS | 168837 | 9.36 | 232264 | 10.24 | 115336 | 13.52 | 133226 | 16.08 | 88412[e] | 6.86 |
| MSM1803-BSD | 171175 | 9.36 | 240254 | 10.24 | 119472 | 13.52 | 138997 | 16.08 | 97287[e] | 6.85 |
| MSM1803-MB | 174347 | 9.36 | 235755 | 10.24 | 112894 | 13.52 | 137372 | 16.08 | 43775 | 6.86 |
| MC16889-1 [d] | 46055[e] | 9.36 | 61913[e] | 10.24 | 30642[e] | 13.52 | 37472[e] | 16.08 | 11790[e] | 6.85 |
| MC16889-5 | 175585 | 9.36 | 242014 | 10.24 | 118948 | 13.52 | 141642 | 16.08 | 76100 | 6.85 |
| MC16889-6 | 165650 | 9.36 | 224359 | 10.24 | 109358 | 13.52 | 130796 | 16.08 | 71480 | 6.86 |
| ZZZZZZ | 166843 | 9.35 | 231566 | 10.24 | 108249 | 13.52 | 120567 | 16.08 | 55773 | 6.85 |
| ZZZZZZ | 166268 | 9.36 | 230402 | 10.24 | 109182 | 13.52 | 120563 | 16.08 | 55983 | 6.86 |
| ZZZZZZ | 171716 | 9.36 | 237080 | 10.24 | 114893 | 13.52 | 140425 | 16.08 | 73226 | 6.85 |
| ZZZZZZ | 166467 | 9.36 | 225249 | 10.24 | 111016 | 13.52 | 138748 | 16.08 | 74273 | 6.85 |
| ZZZZZZ | 169597 | 9.36 | 229467 | 10.24 | 112016 | 13.52 | 137060 | 16.08 | 68847 | 6.85 |
| ZZZZZZ | 166689 | 9.36 | 225966 | 10.24 | 108371 | 13.52 | 133333 | 16.08 | 71059 | 6.85 |
| ZZZZZZ | 165971 | 9.36 | 225518 | 10.24 | 109581 | 13.52 | 134161 | 16.08 | 71712 | 6.85 |
| MC16889-12 | 168993 | 9.36 | 229334 | 10.24 | 111675 | 13.52 | 132679 | 16.08 | 67064 | 6.86 |
| MC16889-12MS | 167716 | 9.36 | 227698 | 10.24 | 110635 | 13.52 | 132218 | 16.08 | 72761 | 6.86 |
| MC16889-12MSD | 167504 | 9.36 | 230159 | 10.24 | 114705 | 13.52 | 134479 | 16.08 | 69378 | 6.86 |
| MC16889-8 | 176350 | 9.36 | 239253 | 10.24 | 116193 | 13.52 | 143002 | 16.08 | 69928 | 6.85 |
| MC16889-9 | 172987 | 9.36 | 233797 | 10.24 | 113839 | 13.52 | 139216 | 16.08 | 68174 | 6.86 |
| MC16889-10 | 176008 | 9.36 | 241048 | 10.24 | 116511 | 13.52 | 144010 | 16.08 | 65193 | 6.85 |
| MC16889-11 | 170606 | 9.36 | 231719 | 10.24 | 111736 | 13.52 | 137065 | 16.08 | 58545 | 6.86 |
| MC16889-13 | 175976 | 9.36 | 236457 | 10.24 | 115508 | 13.52 | 137377 | 16.08 | 66442 | 6.86 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits. Target analytes not associated with this internal standard.
(d) Confirmation run.
(e) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Volatile Internal Standard Area Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1804-CC1800 | Injection Date: | 12/27/12 |
| Lab File ID: | M53117.D | Injection Time: | 09:29 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 180953 | 9.36 | 249177 | 10.24 | 125697 | 13.52 | 143873 | 16.08 | 41987 | 6.86 |
| Upper Limit [a] | 361906 | 9.86 | 498354 | 10.74 | 251394 | 14.02 | 287746 | 16.58 | 83974 | 7.36 |
| Lower Limit [b] | 90477 | 8.86 | 124589 | 9.74 | 62849 | 13.02 | 71937 | 15.58 | 20994 | 6.36 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1804-BS | 165956 | 9.36 | 231215 | 10.24 | 116167 | 13.52 | 135462 | 16.08 | 86522[c] | 6.86 |
| MSM1804-BSD | 159568 | 9.36 | 221915 | 10.24 | 112127 | 13.52 | 129219 | 16.08 | 82403 | 6.86 |
| MSM1804-MB | 167750 | 9.36 | 227098 | 10.24 | 107818 | 13.52 | 131684 | 16.08 | 39001 | 6.86 |
| ZZZZZZ | 176788 | 9.36 | 239941 | 10.24 | 116961 | 13.52 | 141990 | 16.08 | 81691 | 6.86 |
| ZZZZZZ | 171921 | 9.36 | 233256 | 10.24 | 110523 | 13.52 | 129467 | 16.08 | 29420 | 6.86 |
| MC16931-1 | 173355 | 9.36 | 234255 | 10.24 | 113283 | 13.52 | 139095 | 16.08 | 68227 | 6.85 |
| ZZZZZZ | 165986 | 9.36 | 225926 | 10.24 | 110220 | 13.52 | 137043 | 16.09 | 57397 | 6.86 |
| ZZZZZZ | 173567 | 9.36 | 233811 | 10.24 | 113973 | 13.52 | 135012 | 16.09 | 70000 | 6.85 |
| ZZZZZZ | 172216 | 9.36 | 231603 | 10.24 | 112475 | 13.52 | 135807 | 16.09 | 64674 | 6.86 |
| ZZZZZZ | 161352 | 9.36 | 220727 | 10.24 | 106277 | 13.52 | 124550 | 16.09 | 74396 | 6.85 |
| ZZZZZZ | 158063 | 9.36 | 212010 | 10.24 | 96281 | 13.52 | 97794 | 16.08 | 67733 | 6.86 |
| ZZZZZZ | 168054 | 9.36 | 225545 | 10.24 | 103854 | 13.52 | 111521 | 16.09 | 66759 | 6.86 |
| ZZZZZZ | 177084 | 9.36 | 240613 | 10.24 | 116492 | 13.52 | 143940 | 16.08 | 68746 | 6.86 |
| MC16889-14 | 150425 | 9.36 | 207559 | 10.24 | 101282 | 13.52 | 119116 | 16.08 | 42432 | 6.86 |
| ZZZZZZ | 143650 | 9.36 | 191424 | 10.24 | 72129 | 13.52 | 43065[d] | 16.09 | 41871 | 6.86 |
| ZZZZZZ | 153448 | 9.36 | 205619 | 10.24 | 82908 | 13.52 | 60325[d] | 16.09 | 45746 | 6.86 |
| MC16931-1MS | 167774 | 9.36 | 229024 | 10.24 | 117245 | 13.52 | 135696 | 16.08 | 73309 | 6.86 |
| MC16931-1MSD | 159576 | 9.36 | 222745 | 10.24 | 111870 | 13.52 | 130524 | 16.08 | 77650 | 6.85 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits. Target analytes not associated with this internal standard.
(d) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Volatile Internal Standard Area Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSN2685-CC2675 | Injection Date: | 12/24/12 |
| Lab File ID: | N71411.D | Injection Time: | 08:51 |
| Instrument ID: | GCMSN | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 560022 | 9.01 | 744906 | 9.88 | 378504 | 13.14 | 373810 | 15.70 | 161472 | 6.56 |
| Upper Limit [a] | 1120044 | 9.51 | 1489812 | 10.38 | 757008 | 13.64 | 747620 | 16.20 | 322944 | 7.06 |
| Lower Limit [b] | 280011 | 8.51 | 372453 | 9.38 | 189252 | 12.64 | 186905 | 15.20 | 80736 | 6.06 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSN2685-BS | 562587 | 9.01 | 753616 | 9.88 | 373773 | 13.14 | 374592 | 15.70 | 172228 | 6.56 |
| MSN2685-MB | 538169 | 9.01 | 709447 | 9.88 | 328924 | 13.14 | 284977 | 15.70 | 154416 | 6.59 |
| ZZZZZZ | 535505 | 9.01 | 716936 | 9.88 | 331342 | 13.14 | 282290 | 15.70 | 167660 | 6.57 |
| ZZZZZZ | 538490 | 9.01 | 710088 | 9.88 | 329670 | 13.14 | 273277 | 15.70 | 147273 | 6.59 |
| MC16889-7 | 481773 | 9.01 | 639312 | 9.88 | 300872 | 13.14 | 242185 | 15.70 | 133108 | 6.58 |
| ZZZZZZ | 490504 | 9.01 | 656332 | 9.88 | 303216 | 13.14 | 248884 | 15.70 | 134978 | 6.58 |
| ZZZZZZ | 519211 | 9.01 | 690694 | 9.88 | 319892 | 13.14 | 270133 | 15.70 | 159264 | 6.58 |
| ZZZZZZ | 474484 | 9.01 | 630709 | 9.88 | 289246 | 13.14 | 244898 | 15.70 | 159806 | 6.58 |
| MC16880-6 | 513830 | 9.01 | 678950 | 9.88 | 317193 | 13.14 | 267952 | 15.70 | 167108 | 6.57 |
| ZZZZZZ | 523170 | 9.01 | 678226 | 9.88 | 323479 | 13.14 | 275004 | 15.70 | 147440 | 6.57 |
| ZZZZZZ | 495027 | 9.01 | 662268 | 9.88 | 309189 | 13.14 | 265733 | 15.70 | 151134 | 6.57 |
| ZZZZZZ | 468938 | 9.01 | 623166 | 9.88 | 289147 | 13.14 | 237343 | 15.70 | 138441 | 6.57 |
| ZZZZZZ | 471671 | 9.01 | 616462 | 9.88 | 286991 | 13.14 | 233870 | 15.70 | 141928 | 6.58 |
| ZZZZZZ | 507063 | 9.01 | 670347 | 9.88 | 311826 | 13.14 | 264785 | 15.70 | 133472 | 6.58 |
| ZZZZZZ | 504078 | 9.01 | 675684 | 9.88 | 317121 | 13.14 | 261107 | 15.70 | 151289 | 6.58 |
| ZZZZZZ | 505759 | 9.01 | 661233 | 9.88 | 314859 | 13.14 | 257654 | 15.70 | 123629 | 6.59 |
| ZZZZZZ | 501332 | 9.01 | 673783 | 9.88 | 318244 | 13.14 | 279674 | 15.70 | 154330 | 6.57 |
| ZZZZZZ | 504025 | 9.01 | 671588 | 9.88 | 312927 | 13.14 | 288360 | 15.70 | 154674 | 6.57 |
| ZZZZZZ | 502698 | 9.01 | 663030 | 9.88 | 318624 | 13.14 | 290178 | 15.70 | 162588 | 6.57 |
| ZZZZZZ | 500459 | 9.01 | 673320 | 9.88 | 321083 | 13.14 | 286048 | 15.70 | 130202 | 6.58 |
| MC16880-6MS | 519616 | 9.01 | 696993 | 9.88 | 356462 | 13.14 | 357314 | 15.70 | 164656 | 6.55 |
| MC16880-6MSD | 527694 | 9.01 | 709517 | 9.88 | 357957 | 13.14 | 362534 | 15.70 | 150981 | 6.55 |
| ZZZZZZ | 535056 | 9.01 | 706616 | 9.87 | 340855 | 13.14 | 364566 | 15.70 | 130674 | 6.57 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Surrogate Recovery Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC16889-7 | N71417.D | 98.0 | 103.0 | 120.0 |
| MC16880-6MS | N71433.D | 101.0 | 104.0 | 103.0 |
| MC16880-6MSD | N71434.D | 103.0 | 103.0 | 100.0 |
| MSN2685-BS | N71412.D | 104.0 | 104.0 | 103.0 |
| MSN2685-MB | N71414.D | 98.0 | 102.0 | 115.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC16889-1 | M53096.D | 84.0 | 91.0 | 82.0 |
| MC16889-1 | M53059.D | 79.0 | 90.0 | 83.0 |
| MC16889-2 | M53060.D | 82.0 | 88.0 | 84.0 |
| MC16889-3 | M53061.D | 83.0 | 88.0 | 88.0 |
| MC16889-4 | M53062.D | 83.0 | 88.0 | 83.0 |
| MC16889-5 | M53097.D | 84.0 | 87.0 | 80.0 |
| MC16889-6 | M53098.D | 82.0 | 88.0 | 82.0 |
| MC16889-8 | M53110.D | 85.0 | 87.0 | 80.0 |
| MC16889-9 | M53111.D | 84.0 | 88.0 | 80.0 |
| MC16889-10 | M53112.D | 85.0 | 88.0 | 79.0 |
| MC16889-11 | M53113.D | 85.0 | 88.0 | 80.0 |
| MC16889-12 | M53106.D | 82.0 | 88.0 | 81.0 |
| MC16889-13 | M53114.D | 83.0 | 87.0 | 81.0 |
| MC16889-14 | M53134.D | 85.0 | 88.0 | 82.0 |
| MC16889-12MS | M53107.D | 82.0 | 88.0 | 82.0 |
| MC16889-12MSD | M53108.D | 84.0 | 87.0 | 82.0 |
| MC16889-1MS | M53064.D | 85.0 | 88.0 | 80.0 |
| MC16889-1MSD | M53065.D | 83.0 | 88.0 | 82.0 |
| MC16931-1MS | M53139.D | 84.0 | 89.0 | 81.0 |
| MC16931-1MSD | M53140.D | 84.0 | 87.0 | 80.0 |
| MSM1801-BS | M53043.D | 85.0 | 89.0 | 82.0 |
| MSM1801-MB | M53045.D | 82.0 | 88.0 | 80.0 |
| MSM1803-BS | M53092.D | 85.0 | 88.0 | 82.0 |
| MSM1803-BSD | M53093.D | 86.0 | 88.0 | 80.0 |
| MSM1803-MB | M53095.D | 82.0 | 88.0 | 80.0 |
| MSM1804-BS | M53118.D | 86.0 | 88.0 | 81.0 |
| MSM1804-BSD | M53119.D | 84.0 | 87.0 | 80.0 |
| MSM1804-MB | M53121.D | 81.0 | 87.0 | 79.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

6.6.2

New England ACCUTEST LABORATORIES

## GC Volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31480-MB | BB44997.D | 1 | 12/19/12 | CZ | 12/18/12 | OP31480 | GBB2725 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16889-1, MC16889-2, MC16889-3, MC16889-4, MC16889-5, MC16889-6, MC16889-8, MC16889-9, MC16889-10, MC16889-11, MC16889-12, MC16889-13, MC16889-14

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 2.5 | 1.1 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.5 | 0.96 | ug/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 460-00-4 | Bromoflnorobenzene (S) | 114% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 118% | 61-167% |

# Method Blank Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31513-MB | BB45031A.D | 1 | 12/21/12 | CZ | 12/21/12 | OP31513 | GBB2726 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16889-7



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.015 | 0.013 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.015 | 0.010 | ug/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 101% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 94% | 36-173% |

# Blank Spike Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31480-BS | BB44998.D | 1 | 12/19/12 | CZ | 12/18/12 | OP31480 | GBB2725 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16889-1, MC16889-2, MC16889-3, MC16889-4, MC16889-5, MC16889-6, MC16889-8, MC16889-9, MC16889-10, MCI6889-11, MC16889-12, MC16889-13, MC16889-14

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 33.3 | 38.9 | 117 | 59-142 |
| 106-93-4 | 1,2-Dibromoethane | 33.3 | 41.9 | 126 | 56-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 110% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 116% | 61-167% |

7.2.1

7

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31513-BS | BB45032A.D | 1 | 12/21/12 | CZ | 12/21/12 | OP31513 | GBB2726 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16889-7

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 0.071 | 0.061 | 86 | 60-140 |
| 106-93-4 | 1,2-Dibromoethane | 0.071 | 0.063 | 89 | 60-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 103% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 96% | 36-173% |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31480-MS | BB44999.D | 1 | 12/19/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| OP31480-MSD | BB45000.D | 1 | 12/19/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| MC16889-1 | BB45003.D | 1 | 12/19/12 | CZ | 12/18/12 | OP31480 | GBB2725 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16889-1, MC16889-2, MC16889-3, MC16889-4, MC16889-5, MC16889-6, MC16889-8, MC16889-9, MC16889-10, MC16889-11, MC16889-13, MC16889-14

| CAS No. | Compound | MC16889-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 74.7 | 85.1 | 114 | 86.5 | 116 | 2 | 40-156/27 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 74.7 | 96.4 | 129 | 97.5 | 131 | 1 | 48-141/27 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC16889-1 | Limits |
|---|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 99% | 105% | 101% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 114% | 123% | 115% | 61-167% |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31480-MS2 | BB45001.D | 1 | 12/19/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| OP31480-MSD2 | BB45002.D | 1 | 12/19/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| MC16889-12 | BB45014.D | 1 | 12/20/12 | CZ | 12/18/12 | OP31480 | GBB2725 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16889-12



| CAS No. | Compound | MC16889-12 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 70.3 | 80.4 | 114 | 79.1 | 114 | 2 | 40-156/27 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 70.3 | 92.0 | 130 | 93.3 | 134 | 1 | 48-141/27 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC16889-12 | Limits |
|---|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 104% | 98% | 110% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 116% | 118% | 120% | 61-167% |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31513-MS | BB45033A.D | 1 | 12/21/12 | CZ | 12/21/12 | OP31513 | GBB2726 |
| OP31513-MSD | BB45034A.D | 1 | 12/21/12 | CZ | 12/21/12 | OP31513 | GBB2726 |
| MC17000-5 | BB45035A.D | 1 | 12/21/12 | CZ | 12/21/12 | OP31513 | GBB2726 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16889-7

| CAS No. | Compound | MC17000-5 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 0.0698 | 0.059 | 85 | 0.063 | 90 | 7 | 64-141/29 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 0.0698 | 0.063 | 90 | 0.065 | 93 | 3 | 63-163/27 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC17000-5 | Limits |
|---|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 99% | 104% | 99% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 95% | 100% | 95% | 36-173% |

* = Outside of Control Limits.

# Volatile Surrogate Recovery Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8011 Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] | S1 [b] |
|---|---|---|---|
| MC16889-7 | BB45036.D | 97.0 | 90.0 |
| OP31513-BS | BB45032A.D | 103.0 | 96.0 |
| OP31513-MB | BB45031A.D | 101.0 | 94.0 |
| OP31513-MS | BB45033A.D | 99.0 | 95.0 |
| OP31513-MSD | BB45034A.D | 104.0 | 100.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Bromofluorobenzene (S) | 36-173% |

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2

# Volatile Surrogate Recovery Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8011 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] | S1 [b] |
|---|---|---|---|
| MC16889-1 | BB45003.D | 101.0 | 115.0 |
| MC16889-2 | BB45004.D | 118.0 | 121.0 |
| MC16889-3 | BB45005.D | 115.0 | 127.0 |
| MC16889-4 | BB45006.D | 114.0 | 121.0 |
| MC16889-5 | BB45008.D | 114.0 | 121.0 |
| MC16889-6 | BB45009.D | 119.0 | 124.0 |
| MC16889-8 | BK20276.D | 133.0 | 97.0 |
| MC16889-8 | BB45010.D | 0.0* [c] | 0.0* [c] |
| MC16889-9 | BK20277.D | 132.0 | 104.0 |
| MC16889-9 | BB45011.D | 0.0* [c] | 0.0* [c] |
| MC16889-10 | BB45012.D | 126.0 | 130.0 |
| MC16889-11 | BB45013.D | 124.0 | 129.0 |
| MC16889-12 | BB45014.D | 110.0 | 120.0 |
| MC16889-13 | BB45015.D | 118.0 | 128.0 |
| MC16889-14 | BB45016.D | 118.0 | 122.0 |
| OP31480-BS | BB44998.D | 110.0 | 116.0 |
| OP31480-MB | BB44997.D | 114.0 | 118.0 |
| OP31480-MS | BB44999.D | 99.0 | 114.0 |
| OP31480-MS2 | BB45001.D | 104.0 | 116.0 |
| OP31480-MSD | BB45000.D | 105.0 | 123.0 |
| OP31480-MSD2 | BB45002.D | 98.0 | 118.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Bromofluorobenzene (S) | 61-167% |

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2
(c) Surrogate standard not added. Results confirmed by re-extraction/reanalysis.

# GC Surrogate Retention Time Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBB2726-ICC2726 | Injection Date: | 12/21/12 |
| Lab File ID: | BB45025.D | Injection Time: | 17:14 |
| Instrument ID: | GCBB | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 3.38 | 3.62 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| ZZZZZZ | BB45029A.D | 12/21/12 | 19:02 | 3.38 | 3.62 |
| ZZZZZZ | BB45029B.D | 12/21/12 | 19:02 | 3.38 | 3.62 |
| OP31512-MB | BB45031.D | 12/21/12 | 19:56 | 3.38 | 3.62 |
| OP31513-MB | BB45031A.D | 12/21/12 | 19:56 | 3.38 | 3.62 |
| OP31512-BS | BB45032.D | 12/21/12 | 20:23 | 3.38 | 3.62 |
| OP31513-BS | BB45032A.D | 12/21/12 | 20:23 | 3.38 | 3.62 |
| OP31512-MS | BB45033.D | 12/21/12 | 20:50 | 3.38 | 3.62 |
| OP31513-MS | BB45033A.D | 12/21/12 | 20:50 | 3.38 | 3.62 |
| OP31512-MSD | BB45034.D | 12/21/12 | 21:17 | 3.38 | 3.62 |
| OP31513-MSD | BB45034A.D | 12/21/12 | 21:17 | 3.38 | 3.62 |
| MC16984-9 | BB45035.D | 12/21/12 | 21:44 | 3.38 | 3.62 |
| MC17000-5 | BB45035A.D | 12/21/12 | 21:44 | 3.38 | 3.62 |
| MC16889-7 | BB45036.D | 12/21/12 | 22:10 | 3.38 | 3.62 |
| ZZZZZZ | BB45037.D | 12/21/12 | 22:37 | 3.38 | 3.62 |
| ZZZZZZ | BB45038.D | 12/21/12 | 23:04 | 3.38 | 3.62 |
| GBB2726-ECC272B | BB45039.D | 12/22/12 | 06:22 | 3.38 | 3.61 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

# GC Surrogate Retention Time Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBB2725-ICC2725 | Injection Date: | 12/19/12 |
| Lab File ID: | BB44991.D | Injection Time: | 17:58 |
| Instrument ID: | GCBB | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 3.47 | 3.70 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| OP31480-MB | BB44997.D | 12/19/12 | 20:38 | 3.47 | 3.71 |
| OP31480-BS | BB44998.D | 12/19/12 | 21:05 | 3.47 | 3.70 |
| OP31480-MS | BB44999.D | 12/19/12 | 21:32 | 3.47 | 3.71 |
| OP31480-MSD | BB45000.D | 12/19/12 | 21:58 | 3.47 | 3.71 |
| OP31480-MS2 | BB45001.D | 12/19/12 | 22:25 | 3.47 | 3.71 |
| OP31480-MSD2 | BB45002.D | 12/19/12 | 22:52 | 3.47 | 3.71 |
| MC16889-1 | BB45003.D | 12/19/12 | 23:19 | 3.47 | 3.71 |
| MC16889-2 | BB45004.D | 12/19/12 | 23:45 | 3.47 | 3.71 |
| MC16889-3 | BB45005.D | 12/20/12 | 00:12 | 3.47 | 3.71 |
| MC16889-4 | BB45006.D | 12/20/12 | 00:39 | 3.47 | 3.71 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

# GC Surrogate Retention Time Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBB2725-CC2725 | Injection Date: | 12/20/12 |
| Lab File ID: | BB45007.D | Injection Time: | 01:06 |
| Instrument ID: | GCBB | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 3.47 | 3.70 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| MC16889-5 | BB45008.D | 12/20/12 | 01:32 | 3.47 | 3.71 |
| MC16889-6 | BB45009.D | 12/20/12 | 01:59 | 3.47 | 3.71 |
| MC16889-8 | BB45010.D | 12/20/12 | 02:26 | 0.00 | 0.00 |
| MC16889-9 | BB45011.D | 12/20/12 | 02:52 | 0.00 | 0.00 |
| MC16889-10 | BB45012.D | 12/20/12 | 03:19 | 3.47 | 3.71 |
| MC16889-11 | BB45013.D | 12/20/12 | 03:46 | 3.47 | 3.71 |
| MC16889-12 | BB45014.D | 12/20/12 | 04:13 | 3.47 | 3.71 |
| MC16889-13 | BB45015.D | 12/20/12 | 04:40 | 3.47 | 3.71 |
| MC16889-14 | BB45016.D | 12/20/12 | 05:07 | 3.47 | 3.71 |
| ZZZZZZ | BB45017.D | 12/20/12 | 05:33 | 3.47 | 3.71 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

# GC Surrogate Retention Time Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBK733-CC720 | Injection Date: | 12/28/12 |
| Lab File ID: | BK20273.D | Injection Time: | 14:13 |
| Instrument ID: | GCBK | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.78 | 4.45 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| OP31493-MB | BK20274.D | 12/28/12 | 14:39 | 4.78 | 4.45 |
| OP31493-BS | BK20275.D | 12/28/12 | 15:03 | 4.78 | 4.45 |
| MC16889-8 | BK20276.D | 12/28/12 | 15:28 | 4.78 | 4.45 |
| MC16889-9 | BK20277.D | 12/28/12 | 15:52 | 4.78 | 4.45 |
| ZZZZZZ | BK20278.D | 12/28/12 | 16:16 | 4.78 | 4.45 |
| ZZZZZZ | BK20279.D | 12/28/12 | 16:40 | 4.78 | 4.45 |
| ZZZZZZ | BK20280.D | 12/28/12 | 17:04 | 4.78 | 4.45 |
| ZZZZZZ | BK20281.D | 12/28/12 | 17:29 | 4.78 | 4.45 |
| ZZZZZZ | BK20282.D | 12/28/12 | 17:53 | 4.78 | 4.45 |
| ZZZZZZ | BK20283.D | 12/28/12 | 18:17 | 4.78 | 4.45 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

7.5.4

New England ACCUTEST LABORATORIES

## General Chemistry

# QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Sample: MC16889-1 | Analyzed: 17-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-49-11 | | | |
| Wet Weight (Total) | 31.362 | g | |
| Tare Weight | 22.292 | g | |
| Dry Weight (Total) | 30.193 | g | |
| Solids, Percent | 87.1 | % | |
| Sample: MC16889-2 | Analyzed: 17-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-49-21 | | | |
| Wet Weight (Total) | 33.004 | g | |
| Tare Weight | 21.434 | g | |
| Dry Weight (Total) | 29.786 | g | |
| Solids, Percent | 72.2 | % | |
| Sample: MC16889-3 | Analyzed: 17-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-49-31 | | | |
| Wet Weight (Total) | 31.497 | g | |
| Tare Weight | 20.806 | g | |
| Dry Weight (Total) | 29.701 | g | |
| Solids, Percent | 83.2 | % | |
| Sample: MC16889-4 | Analyzed: 17-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-51-14 | | | |
| Wet Weight (Total) | 35.929 | g | |
| Tare Weight | 25.022 | g | |
| Dry Weight (Total) | 35.501 | g | |
| Solids, Percent | 96.1 | % | |
| Sample: MC16889-5 | Analyzed: 17-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-51-21 | | | |
| Wet Weight (Total) | 37.633 | g | |
| Tare Weight | 26.434 | g | |
| Dry Weight (Total) | 37.189 | g | |
| Solids, Percent | 96 | % | |
| Sample: MC16889-6 | Analyzed: 17-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-51-31 | | | |
| Wet Weight (Total) | 42.815 | g | |
| Tare Weight | 30.776 | g | |
| Dry Weight (Total) | 42.424 | g | |
| Solids, Percent | 96.8 | % | |

# Percent Solids Raw Data Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Sample: MC16889-8 | Analyzed: 17-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-52-13 | | | |
| Wet Weight (Total) | 32.96 | g | |
| Tare Weight | 20.013 | g | |
| Dry Weight (Total) | 32.324 | g | |
| Solids, Percent | 95.1 | % | |
| Sample: MC16889-9 | Analyzed: 17-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-52-25 | | | |
| Wet Weight (Total) | 30.585 | g | |
| Tare Weight | 18.823 | g | |
| Dry Weight (Total) | 30.09 | g | |
| Solids, Percent | 95.8 | % | |
| Sample: MC16889-10 | Analyzed: 17-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-52-25 DUP | | | |
| Wet Weight (Total) | 33.282 | g | |
| Tare Weight | 21.284 | g | |
| Dry Weight (Total) | 32.862 | g | |
| Solids, Percent | 96.5 | % | |
| Sample: MC16889-11 | Analyzed: 17-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-52-29 | | | |
| Wet Weight (Total) | 29.394 | g | |
| Tare Weigbt | 21.161 | g | |
| Dry Weight (Total) | 29.048 | g | |
| Solids, Percent | 95.8 | % | |
| Sample: MC16889-12 | Analyzed: 17-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-53-15 | | | |
| Wet Weight (Total) | 38.335 | g | |
| Tare Weight | 28.495 | g | |
| Dry Weight (Total) | 37.783 | g | |
| Solids, Percent | 94.4 | % | |
| Sample: MC16889-13 | Analyzed: 17-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-53-27 | | | |
| Wet Weight (Total) | 26.436 | g | |
| Tare Weight | 18.444 | g | |
| Dry Weight (Total) | 26.082 | g | |
| Solids, Percent | 95.6 | % | |

# Percent Solids Raw Data Summary



Job Number: MC16889
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Sample: MC16889-14 Analyzed: 17-DEC-12 by MA Method: SM21 2540 B MOD.
ClientID: VMP-53-31

| | | |
|---|---|---|
| Wet Weight (Total) | 32.587 | g |
| Tare Weight | 23.381 | g |
| Dry Weight (Total) | 30.683 | g |
| Solids, Percent | 79.3 | % |

8.1

8

# Roxana Drilling 2013 Data Review

**Laboratory SDG: MC16931**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 3/5/2013**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| VMP-54-15 | VMP-54-15-Dup |
| VMP-54-25 | VMP-54-31 |
| TRIP BLANK | |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS/LCSD recoveries were outside evaluation criteria. VOC MS/MSD recoveries were outside of evaluation criteria in sample VMP-54-15. The internal standard area recovery for tert butyl alcohol-$d_9$ in LCS MSM1804-BS was outside criteria. Although not indicated in the laboratory case narrative, analytes were detected in the method blank. Professional judgment was used to qualify the common lab contaminant methylene chloride in several samples. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 1.9°C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

Yes

| Blank ID | Parameter | Analyte | Concentration/ Amount |
|---|---|---|---|
| MSV597-MB | VOCs | Tetrachloroethene | 5.6 ug/L |
| MSV597-MB | VOCs | 1,2,3-Trichlorobenzene | 4.5 ug/L |

Analytical data that were reported non-detect or at concentrations greater than five times (5X) the associated blank concentration did not require qualification. No qualification of

data was required.

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSV597-BS1 | VOCs | Dichlorodifluoromethane | **140** | NA | 70-130 |
| MSM1804-BS/BSD | VOCs | Acrolein | **56/46** | 20 | 70-130/25 |

Analytical data that required qualification based on LCS/LCSD data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| VMP-54-15 | VOCs | Acrolein | **UJ** |
| VMP-54-15-Dup | VOCs | Acrolein | **UJ** |
| VMP-54-25 | VOCs | Acrolein | **UJ** |
| VMP-54-31 | VOCs | Acrolein | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, although not requested, sample VMP-54-15 was spiked and analyzed for VOCs.

*Were MS/MSD recoveries within evaluation criteria?*

No

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/ RPD Criteria |
|---|---|---|---|---|---|
| VMP-54-15 | VOCs | Acrolein | **46/46** | 4 | 70-130/30 |
| VMP-54-15 | VOCs | Dichlorodifluoromethane | **66/69** | 8 | 70-130/30 |

USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone and LCS recoveries were within evaluation criteria with the exception of compounds listed and qualified as appropriate in Section 5.0 of this data review. No further qualification of the data was required.

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

No

| Sample ID | Parameter | Analyte | IS Area Recovery | IS Criteria |
|---|---|---|---|---|
| MSM1804-BS | VOCs | Tert butyl alcohol-$d_9$ | **86522** | 20994-83974 |

LCS MSM1804-BS is a quality control sample and is not qualified. No qualification of data was required.

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

Yes

| Field ID | Field Duplicate ID |
|---|---|
| VMP-54-15 | VMP-54-15-Dup |

*Were field duplicates within evaluation criteria?*

Yes

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

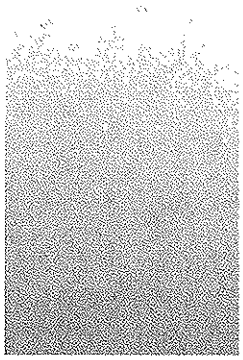
*Were additional qualifications applied?*

Yes, professional judgment was used to qualify the common laboratory contaminant methylene chloride reported at concentrations less than two times (2X) the reporting limit (RL).

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| VMP-54-15 | Methylene chloride | - | **U** | Professional Judgment |
| VMP-54-25 | Methylene chloride | - | **U** | Professional Judgment |
| VMP-54-31 | Methylene chloride | - | **U** | Professional Judgment |

New England ACCUTEST LABORATORIES

01/02/13





## Technical Report for

Shell Oil

URSMOSTL: Roxana Drilling, Roxana, IL

21562850.15000

Accutest Job Number: MC16931

Sampling Date: 12/14/12

Report to:

URS Corporation

elizabeth.kunkel@URS.com

ATTN: Elizabeth Kunkel

Reviewed on 3/5/2013

Total number of pages in report: **75**

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Reza Tand
Lab Director

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# Sample Summary

Shell Oil

Job No: MC16931

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562850.15000

| Sample Number | Collected Date | Time By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|
| MC16931-1 | 12/14/12 | 09:11 WPSJ | 12/15/12 | SO | Soil | VMP-54-15 |
| MC16931-2 | 12/14/12 | 09:11 WPSJ | 12/15/12 | SO | Soil | VMP-54-15 DUP |
| MC16931-3 | 12/14/12 | 09:20 WPSJ | 12/15/12 | SO | Soil | VMP-54-25 |
| MC16931-4 | 12/14/12 | 09:26 WPSJ | 12/15/12 | SO | Soil | VMP-54-31 |
| MC16931-5 | 12/14/12 | 00:00 WPSJ | 12/15/12 | AQ | Trip Blank Water | TRIP BLANK |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

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# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC16931 |
| **Site:** | URSMOSTL: Roxana Drilling, Roxana, IL | **Report Date** | 1/2/2013 3:49:59 PM |

4 Sample(s), 1 Trip Blank(s) were collected on 12/14/2012 and were received at Accutest on 12/15/2012 properly preserved, at 1.9 Deg. C and intact. These Samples received an Accutest job number of MC16931. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. 1-Chlorohexane was searched in the library seareh and reported only if detections were found.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSV597

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC17011-2MS, MC17011-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Dichlorodifluoromethane are ontside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for 2,2-Dichloropropane, 2-Chlorocthyl vinyl ether, Acrolein, Benzene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 1,2,3-Trichlorobenzene, 2-Chloroethyl vinyl ether are outside control limits for sample MC17011-2MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.

**Matrix** SO **Batch ID:** MSM1804

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16931-1MS, MC16931-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- BS/BSD Recovery(s) for Acrolein are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Acrolein, Dichlorodifluoromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

## Volatiles by GC By Method SW846 8011

**Matrix** AQ **Batch ID:** OP31513

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC17000-5MS, MC17000-5MSD were used as the QC samples indicated.

**Matrix** SO **Batch ID:** OP31480

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16889-1MS, MC16889-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN41319 |
|---|---|

- Sample(s) MC16889-12DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC16931).

# Summary of Hits



Job Number: MC16931
Account: Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Collected: 12/14/12

| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| MC16931-1 | VMP-54-15 | | | | | |
| Methylene chloride | | 0.0015 J | 0.0023 | 0.0013 | mg/kg | SW846 8260B |
| MC16931-2 | VMP-54-15 DUP | | | | | |
| No hits reported in this sample. | | | | | | |
| MC16931-3 | VMP-54-25 | | | | | |
| Benzene | | 0.00071 | 0.00053 | 0.00031 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0013 J | 0.0021 | 0.00025 | mg/kg | SW846 8260B |
| Methylene chloride | | 0.0014 J | 0.0021 | 0.0012 | mg/kg | SW846 8260B |
| Toluene | | 0.0021 J | 0.0053 | 0.00089 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.00055 J | 0.0021 | 0.00025 | mg/kg | SW846 8260B |
| MC16931-4 | VMP-54-31 | | | | | |
| Benzene | | 0.00074 | 0.00053 | 0.00031 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0015 J | 0.0021 | 0.00026 | mg/kg | SW846 8260B |
| Methylene chloride | | 0.0014 J | 0.0021 | 0.0012 | mg/kg | SW846 8260B |
| Toluene | | 0.0021 J | 0.0053 | 0.00090 | mg/kg | SW846 8260B |
| o-Xylene | | 0.00029 J | 0.0021 | 0.00025 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.00083 J | 0.0021 | 0.00025 | mg/kg | SW846 8260B |
| MC16931-5 | TRIP BLANK | | | | | |
| No hits reported in this sample. | | | | | | |

New England ACCUTEST LABORATORIES



## Sample Results

## Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-54-15 | | |
| Lab Sample ID: | MC16931-1 | Date Sampled: | 12/14/12 |
| Matrix: | SO - Soil | Date Received: | 12/15/12 |
| Method: | SW846 8260B | Percent Solids: | 94.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53124.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.63 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0057 | 0.0014 | mg/kg | |
| 107-02-8 | Acrolein | ND | 0.029 | 0.011 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 0.029 | 0.0014 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.00057 | 0.00034 | mg/kg | |
| 108-86-I | Bromobenzene | ND | 0.0057 | 0.00025 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0057 | 0.00043 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0023 | 0.00024 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0023 | 0.0023 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0023 | 0.00059 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0057 | 0.0014 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0057 | 0.00021 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0057 | 0.00026 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0057 | 0.0010 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0057 | 0.00019 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0023 | 0.00083 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0023 | 0.00031 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0057 | 0.0014 | mg/kg | |
| 1I0-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0057 | 0.0023 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0023 | 0.00059 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0057 | 0.00053 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0057 | 0.0013 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0057 | 0.00026 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0023 | 0.00034 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0023 | 0.00025 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0023 | 0.00026 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0023 | 0.00024 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0023 | 0.0013 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0023 | 0.00031 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0023 | 0.00033 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0023 | 0.00042 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0023 | 0.00034 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0023 | 0.00033 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presnmptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-54-15 | | |
| Lab Sample ID: | MC16931-1 | Date Sampled: | 12/14/12 |
| Matrix: | SO - Soil | Date Received: | 12/15/12 |
| Method: | SW846 8260B | Percent Solids: | 94.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0023 | 0.00042 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0057 | 0.00026 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0057 | 0.00099 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0057 | 0.00030 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0023 | 0.00019 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0023 | 0.00057 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.029 | 0.029 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0057 | 0.00078 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.0023 | 0.00028 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0057 | 0.00053 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0057 | 0.00057 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0057 | 0.00026 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0057 | 0.00020 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0023 | 0.00033 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0057 | 0.00057 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0057 | 0.00056 | mg/kg | |
| 75-09-2 | Methylene chloride | 0.0015 | 0.0023 | 0.0013 | mg/kg | J |
| 91-20-3 | Naphthalene | ND | 0.0057 | 0.0014 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0057 | 0.0012 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0057 | 0.00027 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0057 | 0.0011 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0023 | 0.00048 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0023 | 0.00026 | mg/kg | |
| 108-88-3 | Tolnene | ND | 0.0057 | 0.00097 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0057 | 0.00027 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0057 | 0.00026 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0023 | 0.00036 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0023 | 0.00084 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0023 | 0.00024 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0023 | 0.00035 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0057 | 0.00033 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0057 | 0.00026 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0057 | 0.00024 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0057 | 0.00064 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0023 | 0.00031 | mg/kg | |
| | m,p-Xylene | ND | 0.0023 | 0.00090 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.0023 | 0.00027 | mg/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.0023 | 0.00027 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-54-15 | | |
| Lab Sample ID: | MC16931-1 | Date Sampled: | 12/14/12 |
| Matrix: | SO - Soil | Date Received: | 12/15/12 |
| Method: | SW846 8260B | Percent Solids: | 94.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 87% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 80% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found iu associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-54-15 | | |
| Lab Sample ID: | MC16931-1 | Date Sampled: | 12/14/12 |
| Matrix: | SO - Soil | Date Received: | 12/15/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | 94.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB45017.D | 1 | 12/20/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.8 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0011 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.00099 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 116% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 125% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-54-15 DUP | | |
| Lab Sample ID: | MC16931-2 | Date Sampled: | 12/14/12 |
| Matrix: | SO - Soil | Date Received: | 12/15/12 |
| Method: | SW846 8260B | Percent Solids: | 94.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53125.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.78 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0055 | 0.0014 | mg/kg | |
| 107-02-8 | Acrolein | ND | 0.028 | 0.011 | mg/kg | ω5 |
| 107-13-1 | Acrylonitrile | ND | 0.028 | 0.0014 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.00055 | 0.00033 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0055 | 0.00025 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0055 | 0.00041 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0022 | 0.00023 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0022 | 0.0022 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0022 | 0.00058 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0055 | 0.0014 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0055 | 0.00020 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0055 | 0.00025 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0055 | 0.00098 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0055 | 0.00018 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0022 | 0.00081 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0022 | 0.00031 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0055 | 0.0014 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0055 | 0.0022 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0022 | 0.00057 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0055 | 0.00051 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0055 | 0.0012 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0055 | 0.00025 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0022 | 0.00033 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0022 | 0.00024 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0022 | 0.00025 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0022 | 0.00023 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0022 | 0.0013 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0022 | 0.00030 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0022 | 0.00032 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0022 | 0.00041 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0022 | 0.00033 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0022 | 0.00032 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-54-15 DUP | | |
| Lab Sample ID: | MC16931-2 | Date Sampled: | 12/14/12 |
| Matrix: | SO - Soil | Date Received: | 12/15/12 |
| Method: | SW846 8260B | Percent Solids: | 94.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0022 | 0.00041 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0055 | 0.00026 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0055 | 0.00096 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0055 | 0.00029 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0022 | 0.00019 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0022 | 0.00055 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.028 | 0.028 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0055 | 0.00076 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.0022 | 0.00027 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0055 | 0.00052 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0055 | 0.00055 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0055 | 0.00025 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0055 | 0.00020 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0022 | 0.00032 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0055 | 0.00055 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0055 | 0.00055 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0022 | 0.0013 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.0055 | 0.0014 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0055 | 0.0011 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0055 | 0.00026 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0055 | 0.0011 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0022 | 0.00047 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0022 | 0.00025 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.0055 | 0.00094 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0055 | 0.00026 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0055 | 0.00025 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0022 | 0.00035 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0022 | 0.00081 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0022 | 0.00023 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0022 | 0.00034 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0055 | 0.00032 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0055 | 0.00025 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0055 | 0.00024 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0055 | 0.00062 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0022 | 0.00030 | mg/kg | |
| | m,p-Xylene | ND | 0.0022 | 0.00087 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.0022 | 0.00027 | mg/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.0022 | 0.00027 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated valoe
B = Indicates analyte found in associated method blank
N = Indicates presomptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-54-15 DUP | | |
| Lab Sample ID: | MC16931-2 | Date Sampled: | 12/14/12 |
| Matrix: | SO - Soil | Date Received: | 12/15/12 |
| Method: | SW846 8260B | Percent Solids: | 94.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 87% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 78% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-54-15 DUP | | |
| Lab Sample ID: | MC16931-2 | Date Sampled: | 12/14/12 |
| Matrix: | SO - Soil | Date Received: | 12/15/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | 94.3 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB45019.D | 1 | 12/20/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.4 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.0010 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 119% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 124% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates valne exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-54-25 | | |
| Lab Sample ID: | MC16931-3 | Date Sampled: | 12/14/12 |
| Matrix: | SO - Soil | Date Received: | 12/15/12 |
| Method: | SW846 8260B | Percent Solids: | 96.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53126.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.91 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0053 | 0.0013 | mg/kg | |
| 107-02-8 | Acrolein | ND | 0.026 | 0.011 | mg/kg | |
| 107-13-1 | Acrylonitrile | ND | 0.026 | 0.0013 | mg/kg | |
| 71-43-2 | Benzene | 0.00071 | 0.00053 | 0.00031 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0053 | 0.00023 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0053 | 0.00039 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0021 | 0.0021 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0021 | 0.00055 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0053 | 0.0013 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0053 | 0.00019 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 98-06-6 | tert-Bntylbenzene | ND | 0.0053 | 0.00093 | mg/kg | |
| 75-15-0 | Carbon disnlfide | ND | 0.0053 | 0.00017 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0021 | 0.00077 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0021 | 0.00029 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0053 | 0.0013 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0053 | 0.0021 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0021 | 0.00054 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0053 | 0.00049 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0053 | 0.0012 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0053 | 0.00024 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0021 | 0.00031 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0021 | 0.00023 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0021 | 0.00024 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0021 | 0.0012 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0021 | 0.00028 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0021 | 0.00030 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0021 | 0.00039 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0021 | 0.00032 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0021 | 0.00030 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-54-25 | | |
| Lab Sample ID: | MC16931-3 | Date Sampled: | 12/14/12 |
| Matrix: | SO - Soil | Date Received: | 12/15/12 |
| Method: | SW846 8260B | Percent Solids: | 96.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxaua, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0021 | 0.00039 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0053 | 0.00024 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0053 | 0.00091 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0053 | 0.00028 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0021 | 0.00018 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0021 | 0.00052 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.026 | 0.026 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0053 | 0.00072 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0013 | 0.0021 | 0.00025 | mg/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0053 | 0.00049 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0053 | 0.00053 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0053 | 0.00019 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0021 | 0.00030 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0053 | 0.00053 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0053 | 0.00052 | mg/kg | |
| 75-09-2 | Methylene chloride | ~~0.0014~~ | 0.0021 | 0.0012 | mg/kg | J |
| 91-20-3 | Naphthalene | ND | 0.0053 | 0.0013 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0053 | 0.0011 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0053 | 0.00025 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0053 | 0.0011 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0021 | 0.00045 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0021 | 0.00024 | mg/kg | |
| 108-88-3 | Toluene | 0.0021 | 0.0053 | 0.00089 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0053 | 0.00025 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0021 | 0.00033 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0021 | 0.00077 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0021 | 0.00032 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0053 | 0.00031 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0053 | 0.00023 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0053 | 0.00059 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0021 | 0.00029 | mg/kg | |
| | m,p-Xylene | ND | 0.0021 | 0.00083 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.0021 | 0.00025 | mg/kg | |
| 1330-20-7 | Xylene (total) | 0.00055 | 0.0021 | 0.00025 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-54-25 | | |
| Lab Sample ID: | MC16931-3 | Date Sampled: | 12/14/12 |
| Matrix: | SO - Soil | Date Received: | 12/15/12 |
| Method: | SW846 8260B | Percent Solids: | 96.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 83% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 82% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-54-25 | | |
| Lab Sample ID: | MC16931-3 | Date Sampled: | 12/14/12 |
| Matrix: | SO - Soil | Date Received: | 12/15/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | 96.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB45020.D | 1 | 12/20/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.2 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0011 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.00099 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 112% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 121% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-54-31 | | |
| Lab Sample ID: | MC16931-4 | Date Sampled: | 12/14/12 |
| Matrix: | SO - Soil | Date Received: | 12/15/12 |
| Method: | SW846 8260B | Percent Solids: | 97.0 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53127.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.86 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0053 | 0.0013 | mg/kg | |
| 107-02-8 | Acrolein | ND | 0.027 | 0.011 | mg/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 0.027 | 0.0013 | mg/kg | |
| 71-43-2 | Benzene | 0.00074 | 0.00053 | 0.00031 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0053 | 0.00040 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0021 | 0.0021 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0021 | 0.00055 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0053 | 0.0013 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0053 | 0.00020 | mg/kg | |
| 135-98-8 | sec-Bntylbenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0053 | 0.00093 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0053 | 0.00017 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0021 | 0.00077 | mg/kg | |
| 108-90-7 | Chlorohenzene | ND | 0.0021 | 0.00029 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0053 | 0.0013 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0053 | 0.0021 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0021 | 0.00055 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0053 | 0.00049 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0053 | 0.0012 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0053 | 0.00024 | mg/kg | |
| 124-48-1 | Dibromocbloromethane | ND | 0.0021 | 0.00031 | mg/kg | |
| 95-50-1 | 1,2-Dichlorohenzene | ND | 0.0021 | 0.00023 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0021 | 0.00024 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0021 | 0.0012 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0021 | 0.00029 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0021 | 0.00030 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0021 | 0.00039 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0021 | 0.00032 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0021 | 0.00030 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presnmptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-54-31 | | |
| Lab Sample ID: | MC16931-4 | Date Sampled: | 12/14/12 |
| Matrix: | SO - Soil | Date Received: | 12/15/12 |
| Method: | SW846 8260B | Percent Solids: | 97.0 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0021 | 0.00039 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0053 | 0.00025 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0053 | 0.00092 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0053 | 0.00028 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0021 | 0.00018 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0021 | 0.00053 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.027 | 0.027 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0053 | 0.00072 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0015 | 0.0021 | 0.00026 | mg/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0053 | 0.00049 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0053 | 0.00053 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0053 | 0.00019 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0021 | 0.00031 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0053 | 0.00053 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0053 | 0.00052 | mg/kg | |
| 75-09-2 | Methylene chloride | ~~0.0014~~ | 0.0021 | 0.0012 | mg/kg | J |
| 91-20-3 | Naphthalene | ND | 0.0053 | 0.0013 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0053 | 0.0011 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0053 | 0.00025 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0053 | 0.0011 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0021 | 0.00045 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0021 | 0.00024 | mg/kg | |
| 108-88-3 | Toluene | 0.0021 | 0.0053 | 0.00090 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0053 | 0.00025 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0021 | 0.00033 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0021 | 0.00078 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0021 | 0.00032 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0053 | 0.00031 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0053 | 0.00023 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0053 | 0.00059 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0021 | 0.00029 | mg/kg | |
| | m,p-Xylene | ND | 0.0021 | 0.00084 | mg/kg | |
| 95-47-6 | o-Xylene | 0.00029 | 0.0021 | 0.00025 | mg/kg | J |
| 1330-20-7 | Xylene (total) | 0.00083 | 0.0021 | 0.00025 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates valne exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-54-31 | | |
| Lab Sample ID: | MC16931-4 | Date Sampled: | 12/14/12 |
| Matrix: | SO - Soil | Date Received: | 12/15/12 |
| Method: | SW846 8260B | Percent Solids: | 97.0 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 82% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a componnd

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-54-31 | | |
| Lab Sample ID: | MC16931-4 | Date Sampled: | 12/14/12 |
| Matrix: | SO - Soil | Date Received: | 12/15/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | 97.0 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB45021.D | 1 | 12/20/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.8 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0025 | 0.0011 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0025 | 0.00097 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobeuzene (S) | 115% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 124% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16931-5 | Date Sampled: | 12/14/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/15/12 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V14714.D | 1 | 12/28/12 | AMY | n/a | n/a | MSV597 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 3.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.2 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.24 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.62 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.3 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.58 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.78 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.0 | ng/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.4 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.61 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.55 | ug/l | |
| 98-06-6 | tert-Bntylbenzene | ND | 5.0 | 0.64 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.61 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.87 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.47 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.50 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 1.3 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.50 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.73 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.65 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.48 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.53 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.93 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.45 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.64 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.7 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.62 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.41 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.95 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16931-5 | Date Sampled: | 12/14/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/15/12 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.72 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.64 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 1.6 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.91 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.45 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.20 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 15 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.81 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.51 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 2.1 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.50 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.57 | ng/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.41 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 2.9 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.1 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.83 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.58 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.45 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.57 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.60 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.42 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.51 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.3 | ng/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.85 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.50 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.78 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.29 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.85 | ng/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.35 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.47 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.3 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.63 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.73 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.58 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.58 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte fonnd in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16931-5 | Date Sampled: | 12/14/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/15/12 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 86% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 94% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte fonnd in associated method blank
N = Indicates presumptive evidence of a componnd

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK | | |
| Lab Sample ID: | MC16931-5 | Date Sampled: | 12/14/12 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 12/15/12 |
| Method: | SW846 8011 SW846 8011 | Percent Solids: | n/a |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BB45037.D | 1 | 12/21/12 | CZ | 12/21/12 | OP31513 | GBB2726 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 34.9 ml | 2.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.015 | 0.013 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.015 | 0.010 | ug/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 99% | | 36-173% |
| 460-00-4 | Bromoflnorobenzene (S) | 94% | | 36-173% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

## Misc. Forms



### Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

ACCUTEST LABORATORIES

# CHAIN OF CUSTODY

Accutest Laboratories of New England
495 Technology Center West, Building One
TEL. 508-481-6200 FAX: 508-481-7753
www.accutest.com

PAGE 1 OF 1

FED EX Tracking #: | Bottle Order Control #:
Accutest Quote #: | Accutest Job #: MC16931

**Client / Reporting Information**

Company Name: URS
Street Address:
City: State: Zip:
Project Contact: E. Kunkel E-mail:
Phone #: Fax #:
Sampler(s) Name(s): Wendy Pennington Susie Jansen Phone #:

**Project Information**

Project Name: Roxana Drilling
Street:
City: Roxana IL
Client PO#:
Project #: 215628850.15000
Project Manager: D Palmer

**Billing Information (If different from Report to)**

Company Name: URS
Street Address:
City: State: Zip:
Attention: PO#:

**Requested Analysis (see TEST CODE sheet)**

VOC 8260
VOC 8011

**Matrix Codes**

DW - Drinking Water
GW - Ground Water
WW - Water
SW - Surface Water
SO - Soil
SL - Sludge
SED - Sediment
OI - Oil
LIQ - Other Liquid
AIR - Air
SOL - Other Solid
WP - Wipe
FB - Field Blank
EB - Equipment Blank
RB - Rinse Blank
TB - Trip Blank

| Accutest Lab ID # | Field ID / Point of Collection | MEOH Vial # | Collection Date | Collection Time | Sampled by | Matrix | # of bottles | Number of preserved Bottles: HCl | HNO3 | CONN | H2SO4 | NONE | DI Water | MEOH | ENCORE | Sodium Bisulfate | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | VMP-54-15 | | 12/14/12 | 0911 | WP/SJ | SO | 4 | | | | | X | | X | | X | |
| -2 | VMP-54-15 Dup | | | 0911 | | | 4 | | | | | X | | X | | X | |
| -3 | VMP-54-25 | | | 0920 | | | 4 | | | | | X | | X | | X | |
| -4 | VMP-54-31 | | | 0926 | | | 4 | | | | | X | | X | | X | |
| -5 | Trip Blank | | | | | | 4 | | | | | X | | X | | X | |

4H2, 10F
10L4

**Turnaround Time (Business days)**

Approved By (Accutest PM) / Date:

- [X] Std. 10 Business Days
- [ ] Std. 5 Business Days (By Contract only)
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA LabLink

**Data Deliverable Information**

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [X] FULL T1 (Level 3+4)
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [X] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

**Comments / Special Instructions**

**Sample Custody must be documented below each time samples change possession, including courier delivery.**

| | Relinquished by Sampler | Date Time | Received By | Relinquished By | Date Time | Received By |
|---|---|---|---|---|---|---|
| 1 | Wendy Pennington | 12/14/12 1200 | Fed Ex | 2 Fed Ex | 12-15-12 9:45 | 2 |
| 3 | | | 3 | 4 | | 4 |
| 5 | | | 5 | Custody Seal # | [ ] Intact [ ] Not Intact | Preserved where applicable [ ] | On Ice [X] Cooler Temp 1.9° |

5.1

**MC16931: Chain of Custody**
**Page 1 of 2**

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC16931 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 12/15/2012 Delivery Method: Client Service Action Required at Login: No

Project: ROXANA DRILLING No. Coolers: 1 Airbill #'s:

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2. Custody Seals Intact: | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification: | Infared gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservatio | Y or N | N/A |
|---|---|---|
| 1. Trip Blank present / cooler: | ☑ ☐ | ☐ |
| 2. Trip Blank listed on COC: | ☑ ☐ | ☐ |
| 3. Samples preserved properly: | ☑ ☐ | |
| 4. VOCs headspace free: | ☑ ☐ | ☐ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles: | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree: | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1. Sample recvd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3. Condition of sample: | Intact |

| Sample Integrity - Instructions | Y or N | N/A |
|---|---|---|
| 1. Analysis requested is clear: | ☑ ☐ | |
| 2. Bottles received for unspecified tests | ☐ ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ ☐ | |
| 4. Compositing instructions clear: | ☐ ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ ☐ | ☑ |

Comments

Accutest Laboratories
V 508 481 6200

495 Technology Center West, Bldg One
F 508 481 7753

Marlborough, MA
www.accutest.com

5.1

5

**MC16931: Chain of Custody**
**Page 2 of 2**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC16931

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562850.15000



| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC16931-1 Collected: 14-DEC-12 09:11 By: WPSJ Received: 15-DEC-12 By: VMP-54-15 | | | | | | |
| MC16931-1 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16931-1 | SW846 8011 | 20-DEC-12 05:33 | CZ | 18-DEC-12 | NK | V8011SL |
| MC16931-1 | SW846 8260B | 27-DEC-12 13:03 | AMY | | | V8260SL+ |
| MC16931-2 Collected: 14-DEC-12 09:11 By: WPSJ Received: 15-DEC-12 By: VMP-54-15 DUP | | | | | | |
| MC16931-2 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16931-2 | SW846 8011 | 20-DEC-12 06:27 | CZ | 18-DEC-12 | NK | V8011SL |
| MC16931-2 | SW846 8260B | 27-DEC-12 13:34 | AMY | | | V8260SL+ |
| MC16931-3 Collected: 14-DEC-12 09:20 By: WPSJ Received: 15-DEC-12 By: VMP-54-25 | | | | | | |
| MC16931-3 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16931-3 | SW846 8011 | 20-DEC-12 06:54 | CZ | 18-DEC-12 | NK | V8011SL |
| MC16931-3 | SW846 8260B | 27-DEC-12 14:05 | AMY | | | V8260SL+ |
| MC16931-4 Collected: 14-DEC-12 09:26 By: WPSJ Received: 15-DEC-12 By: VMP-54-31 | | | | | | |
| MC16931-4 | SM21 2540 B MOD. | 17-DEC-12 | MA | | | %SOL |
| MC16931-4 | SW846 8011 | 20-DEC-12 07:21 | CZ | 18-DEC-12 | NK | V8011SL |
| MC16931-4 | SW846 8260B | 27-DEC-12 14:36 | AMY | | | V8260SL+ |
| MC16931-5 Collected: 14-DEC-12 00:00 By: WPSJ Received: 15-DEC-12 By: TRIP BLANK | | | | | | |
| MC16931-5 | SW846 8011 | 21-DEC-12 22:37 | CZ | 21-DEC-12 | BJ | V8011SL |
| MC16931-5 | SW846 8260B | 28-DEC-12 15:05 | AMY | | | V8260SL+ |

# Accutest Internal Chain of Custody



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 12/15/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16931-1.1 | Walk In Ref #9 | Mehdi Abdolrahim | 12/17/12 16:49 | Retrieve from Storage |
| MC16931-1.1 | Mehdi Abdolrahim | Walk In Ref #9 | 12/18/12 07:17 | Return to Storage |
| MC16931-1.1 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |
| MC16931-1.1 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16931-1.1 | Walk In Ref #9 | Amy Min Yang | 12/27/12 18:24 | Retrieve from Storage |
| MC16931-1.1 | Amy Min Yang | Walk In Ref #9 | 12/27/12 18:24 | Retnrn to Storage |
| MC16931-1.2 | VOC Ref #10 | Amy Min Yang | 12/27/12 11:22 | Retrieve from Storage |
| MC16931-1.2 | Amy Min Yang | GCMSM | 12/27/12 11:22 | Load on Instrument |
| MC16931-1.4 | VOC Ref #10 | Gary Krasinski | 12/18/12 12:00 | Retrieve from Storage |
| MC16931-1.4 | Gary Krasinski | VOC Ref #10 | 12/19/12 09:12 | Return to Storage |
| MC16931-2.1 | Walk In Ref #9 | Mehdi Abdolrahim | 12/17/12 16:49 | Retrieve from Storage |
| MC16931-2.1 | Mehdi Abdolrahim | Walk Iu Ref #9 | 12/18/12 07:17 | Return to Storage |
| MC16931-2.1 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |
| MC16931-2.1 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16931-2.2 | VOC Ref #10 | Amy Min Yang | 12/27/12 11:22 | Retrieve from Storage |
| MC16931-2.2 | Amy Min Yang | GCMSM | 12/27/12 11:22 | Load on Instrument |
| MC16931-2.4 | VOC Ref #10 | Gary Krasinski | 12/18/12 12:00 | Retrieve from Storage |
| MC16931-2.4 | Gary Krasinski | VOC Ref #10 | 12/19/12 09:12 | Return to Storage |
| MC16931-3.1 | Walk In Ref #9 | Mehdi Abdolrahim | 12/17/12 16:49 | Retrieve from Storage |
| MC16931-3.1 | Mehdi Abdolrahim | Walk In Ref #9 | 12/18/12 07:17 | Return to Storage |
| MC16931-3.1 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |
| MC16931-3.1 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16931-3.2 | VOC Ref #10 | Amy Min Yang | 12/27/12 11:22 | Retrieve from Storage |
| MC16931-3.2 | Amy Min Yang | GCMSM | 12/27/12 11:22 | Load on Instrument |
| MC16931-3.4 | VOC Ref #10 | Gary Krasinski | 12/18/12 12:00 | Retrieve from Storage |
| MC16931-3.4 | Gary Krasinski | VOC Ref #10 | 12/19/12 09:12 | Return to Storage |
| MC16931-4.1 | Walk In Ref #9 | Mehdi Abdolrahim | 12/17/12 16:49 | Retrieve from Storage |
| MC16931-4.1 | Mehdi Abdolrahim | Walk In Ref #9 | 12/18/12 07:17 | Return to Storage |
| MC16931-4.1 | Walk In Ref #9 | Nick Krasinski | 12/18/12 21:45 | Retrieve from Storage |
| MC16931-4.1 | Nick Krasinski | Walk In Ref #9 | 12/18/12 21:45 | Return to Storage |
| MC16931-4.2 | VOC Ref #10 | Amy Min Yang | 12/27/12 11:22 | Retrieve from Storage |
| MC16931-4.2 | Amy Min Yang | GCMSM | 12/27/12 11:22 | Load on Instrument |
| MC16931-4.4 | VOC Ref #10 | Gary Krasinski | 12/18/12 12:00 | Retrieve from Storage |

5.3
5

# Accutest Internal Chain of Custody



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 12/15/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16931-4.4 | Gary Krasinski | VOC Ref #10 | 12/19/12 09:12 | Return to Storage |
| MC16931-5.1 | VOC Ref #4 | Amy Min Yang | 12/27/12 17:55 | Retrieve from Storage |
| MC16931-5.1 | Amy Min Yang | GCMSV | 12/27/12 17:55 | Load on Instrument |
| MC16931-5.1 | GCMSV | Amy Min Yang | 12/28/12 17:31 | Unload from Instrument |
| MC16931-5.1 | Amy Min Yang | VOC Ref #4 | 12/28/12 17:31 | Return to Storage |
| MC16931-5.2 | VOC Ref #4 | Amy Min Yang | 12/28/12 14:33 | Retrieve from Storage |
| MC16931-5.2 | Amy Min Yang | GCMSV | 12/28/12 14:33 | Load on Instrument |
| MC16931-5.2 | GCMSV | Amy Min Yang | 12/28/12 17:31 | Unload from Instrument |
| MC16931-5.2 | Amy Min Yang | VOC Ref #4 | 12/28/12 17:31 | Return to Storage |
| MC16931-5.3 | VOC Ref #4 | Nick Krasinski | 12/21/12 13:02 | Retrieve from Storage |
| MC16931-5.3 | Nick Krasinski | | 12/21/12 14:24 | Depleted |

5.3

New England ACCUTEST LABORATORIES

## GC/MS Volatiles



## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1804-MB | M53121.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16931-1, MC16931-2, MC16931-3, MC16931-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 25 | 1.3 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.29 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.37 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 2.0 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.52 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.88 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.16 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.73 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.28 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 1.3 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 2.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.52 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.46 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.23 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.30 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.22 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.23 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.21 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.27 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.29 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.37 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.37 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.23 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.87 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.26 | ug/kg | |

# Method Blank Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1804-MB | M53121.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16931-1, MC16931-2, MC16931-3, MC16931-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 0.17 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.50 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.68 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.24 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 0.46 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 0.50 | ng/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.29 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.50 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.49 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 1.2 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 1.3 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 1.0 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.23 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.43 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.23 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.85 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 0.24 | ng/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 0.23 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.31 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.73 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.30 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.29 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.22 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.21 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 0.56 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.27 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.79 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.24 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.24 | ug/kg | |

# Method Blank Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1804-MB | M53121.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16931-1, MC16931-2, MC16931-3, MC16931-4

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 81% | 70-130% |
| 2037-26-5 | Toluene-D8 | 87% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 79% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/kg | |

# Method Blank Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV597-MB1 | V14713.D | 1 | 12/28/12 | AMY | n/a | n/a | MSV597 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16931-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 3.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.2 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.24 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.62 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.3 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.58 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.78 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.4 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.61 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.55 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.64 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.61 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.87 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.47 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.50 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 1.3 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.50 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.73 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.65 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.48 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.53 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.93 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.45 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.64 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.7 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.62 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.41 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.95 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.72 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.64 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 1.6 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.91 | ug/l | |

# Method Blank Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV597-MB1 | V14713.D | 1 | 12/28/12 | AMY | n/a | n/a | MSV597 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16931-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.45 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.20 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 15 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.81 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.51 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 2.1 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.50 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.57 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.41 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 2.9 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.1 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.83 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.58 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.45 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetracbloroethane | ND | 5.0 | 0.57 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.60 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.42 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.51 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.85 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.50 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.78 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.29 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.85 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.35 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.47 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.3 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.63 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.73 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.58 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.58 | ug/l | |

6.1.2

# Method Blank Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV597-MB1 | V14713.D | 1 | 12/28/12 | AMY | n/a | n/a | MSV597 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16931-5

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 88% | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

# Method Blank Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV597-MB | V14683.D | 1 | 12/27/12 | AMY | n/a | n/a | MSV597 |



The QC reported here applies to the following samples: Method: SW846 8260B

MSV597-BS1, MC17011-2MS, MC17011-2MSD

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 3.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.2 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.24 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.62 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.3 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.58 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.78 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.4 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.61 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.55 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.64 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.61 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.87 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.47 | ng/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.50 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 1.3 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.50 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.73 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.65 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.48 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.53 | ug/l | |
| 95-50-1 | 1,2-Dichlorobeuzene | ND | 1.0 | 0.93 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.45 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.64 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.7 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.62 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.41 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.95 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.72 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.64 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 1.6 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.91 | ng/l | |

# Method Blank Summary

Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV597-MB | V14683.D | 1 | 12/27/12 | AMY | n/a | n/a | MSV597 |

The QC reported here applies to the following samples: Method: SW846 8260B

MSV597-BS1, MC17011-2MS, MC17011-2MSD

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.45 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.20 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 15 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.81 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.51 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 2.1 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.50 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.57 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.41 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 2.9 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.1 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.83 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.58 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.45 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.57 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.60 | ug/l | |
| 127-18-4 | Tetrachloroethene | 5.6 | 1.0 | 0.42 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.51 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | 4.5 | 5.0 | 1.3 | ug/l | J |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.3 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.85 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.50 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.78 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.29 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.85 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.35 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.47 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.3 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.63 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.73 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.58 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.58 | ug/l | |

# Method Blank Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV597-MB | V14683.D | 1 | 12/27/12 | AMY | n/a | n/a | MSV597 |

The QC reported here applies to the following samples: Method: SW846 8260B

MSV597-BS1, MC17011-2MS, MC17011-2MSD

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 86% | 70-130% |
| 2037-26-5 | Toluene-D8 | 94% | 70-130% |
| 460-00-4 | 4-Bromofluorobeuzene | 96% | 70-130% |

# Blank Spike Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV597-BS1 | V14709.D | 1 | 12/28/12 | AMY | n/a | n/a | MSV597 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16931-5

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 61.2 | 122 | 70-130 |
| 107-02-8 | Acrolein | 250 | 196 | 78 | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 48.2 | 96 | 70-130 |
| 71-43-2 | Benzene | 50 | 47.1 | 94 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 50.9 | 102 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 49.3 | 99 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 44.5 | 89 | 70-130 |
| 75-25-2 | Bromoform | 50 | 41.0 | 82 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 51.8 | 104 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 51.3 | 103 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 53.0 | 106 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 47.9 | 96 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 46.7 | 93 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 48.1 | 96 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 43.7 | 87 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 46.2 | 92 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 53.0 | 106 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 46.2 | 92 | 70-130 |
| 67-66-3 | Chloroform | 50 | 50.0 | 100 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 58.5 | 117 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 47.4 | 95 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 49.3 | 99 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 41.4 | 83 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 47.0 | 94 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 47.2 | 94 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 48.4 | 97 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 69.8 | 140* a | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 50.8 | 102 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 48.3 | 97 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 49.4 | 99 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 49.2 | 98 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 48.8 | 98 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 49.9 | 100 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 47.8 | 96 | 70-130 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 61.0 | 122 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 47.7 | 95 | 70-130 |

* = Outside of Control Limits.

6.2.1

# Blank Spike Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV597-BS1 | V14709.D | 1 | 12/28/12 | AMY | n/a | n/a | MSV597 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16931-5

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 43.5 | 87 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 44.7 | 89 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 226 | 90 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 45.2 | 90 | 77-137 |
| 100-41-4 | Ethylbenzene | 50 | 48.9 | 98 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 52.2 | 104 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 47.6 | 95 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 48.4 | 97 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 53.3 | 107 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 48.6 | 97 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 43.3 | 87 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 49.5 | 99 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 48.8 | 98 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 50.7 | 101 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 48.8 | 98 | 70-130 |
| 100-42-5 | Styrene | 50 | 46.4 | 93 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 44.7 | 89 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 46.0 | 92 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 48.4 | 97 | 70-130 |
| 108-88-3 | Toluene | 50 | 48.9 | 98 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 54.6 | 109 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 53.1 | 106 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 49.9 | 100 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 48.6 | 97 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 46.9 | 94 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 48.2 | 96 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 44.5 | 89 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 49.4 | 99 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 49.8 | 100 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 54.3 | 109 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 49.4 | 99 | 70-130 |
| | m,p-Xylene | 100 | 95.8 | 96 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 47.8 | 96 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 144 | 96 | 70-130 |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV597-BS1 | V14709.D | 1 | 12/28/12 | AMY | n/a | n/a | MSV597 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16931-5

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1804-BS | M53118.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| MSM1804-BSD | M53119.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16931-1, MC16931-2, MC16931-3, MC16931-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 36.1 | 72 | 34.9 | 70 | 3 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 140 | 56* a | 115 | 46* a | 20 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 44.4 | 89 | 46.7 | 93 | 5 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 46.0 | 92 | 48.1 | 96 | 4 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 44.3 | 89 | 46.3 | 93 | 4 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 45.0 | 90 | 47.4 | 95 | 5 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 44.4 | 89 | 46.8 | 94 | 5 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 44.6 | 89 | 45.7 | 91 | 2 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 45.9 | 92 | 49.2 | 98 | 7 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 48.1 | 96 | 43.4 | 87 | 10 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 50.9 | 102 | 51.9 | 104 | 2 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 48.6 | 97 | 49.9 | 100 | 3 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 47.1 | 94 | 49.1 | 98 | 4 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 51.3 | 103 | 54.9 | 110 | 7 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 52.2 | 104 | 55.6 | 111 | 6 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 44.5 | 89 | 45.5 | 91 | 2 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 48.1 | 96 | 51.6 | 103 | 7 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 49.0 | 98 | 47.3 | 95 | 4 | 10-160/25 |
| 67-66-3 | Chloroform | 50 | 45.7 | 91 | 48.3 | 97 | 6 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 44.4 | 89 | 48.4 | 97 | 9 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 43.9 | 88 | 45.2 | 90 | 3 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 45.0 | 90 | 46.4 | 93 | 3 | 70-130/25 |
| 124-48-1 | Dihromochloromethane | 50 | 43.9 | 88 | 45.4 | 91 | 3 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 43.0 | 86 | 44.1 | 88 | 3 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 44.7 | 89 | 45.4 | 91 | 2 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 44.7 | 89 | 46.5 | 93 | 4 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 37.6 | 75 | 38.6 | 77 | 3 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 47.0 | 94 | 49.4 | 99 | 5 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 44.0 | 88 | 45.9 | 92 | 4 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 52.3 | 105 | 55.4 | 111 | 6 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 44.9 | 90 | 47.0 | 94 | 5 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 48.7 | 97 | 51.5 | 103 | 6 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 42.7 | 85 | 44.9 | 90 | 5 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 42.6 | 85 | 44.5 | 89 | 4 | 70-130/25 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 51.0 | 102 | 53.8 | 108 | 5 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 51.7 | 103 | 54.6 | 109 | 5 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1804-BS | M53118.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| MSM1804-BSD | M53119.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16931-1, MC16931-2, MC16931-3, MC16931-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 43.0 | 86 | 44.7 | 89 | 4 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 45.7 | 91 | 47.8 | 96 | 4 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 248 | 99 | 262 | 105 | 5 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 49.5 | 99 | 50.1 | 100 | 1 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 50 | 48.1 | 96 | 49.6 | 99 | 3 | 70-130/25 |
| 87-68-3 | Hexachlorobntadiene | 50 | 53.0 | 106 | 54.4 | 109 | 3 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 51.9 | 104 | 54.4 | 109 | 5 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 46.7 | 93 | 48.3 | 97 | 3 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 52.0 | 104 | 53.8 | 108 | 3 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 41.1 | 82 | 43.3 | 87 | 5 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 49.6 | 99 | 50.5 | 101 | 2 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 44.6 | 89 | 46.4 | 93 | 4 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 40.8 | 82 | 43.0 | 86 | 5 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 54.9 | 110 | 54.4 | 109 | 1 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 46.5 | 93 | 48.6 | 97 | 4 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 45.1 | 90 | 46.7 | 93 | 3 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachlnroethane | 50 | 45.6 | 91 | 46.6 | 93 | 2 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 44.0 | 88 | 46.3 | 93 | 5 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 53.2 | 106 | 55.6 | 111 | 4 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 49.0 | 98 | 51.7 | 103 | 5 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 47.4 | 95 | 47.8 | 96 | 1 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 48.2 | 96 | 48.3 | 97 | 0 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 51.2 | 102 | 54.0 | 108 | 5 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 43.7 | 87 | 45.1 | 90 | 3 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 49.6 | 99 | 52.1 | 104 | 5 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 54.7 | 109 | 58.6 | 117 | 7 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 46.5 | 93 | 47.7 | 95 | 3 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 47.2 | 94 | 49.2 | 98 | 4 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 47.5 | 95 | 49.6 | 99 | 4 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 42.0 | 84 | 39.9 | 80 | 5 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 45.8 | 92 | 48.7 | 97 | 6 | 70-130/25 |
| | m,p-Xylene | 100 | 95.9 | 96 | 99.0 | 99 | 3 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 45.7 | 91 | 47.5 | 95 | 4 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 142 | 95 | 146 | 97 | 3 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1804-BS | M53118.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| MSM1804-BSD | M53119.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16931-1, MC16931-2, MC16931-3, MC16931-4

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 86% | 84% | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | 87% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 81% | 80% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16931-1MS | M53139.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| MC16931-1MSD | M53140.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| MC16931-1 | M53124.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16931-1, MC16931-2, MC16931-3, MC16931-4

| CAS No. | Compound | MC16931-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 87.8 | 77.6 | 88 | 84.8 | 93 | 9 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 439 | 201 | 46* a | 209 | 46* a | 4 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 87.8 | 97.6 | 111 | 103 | 113 | 5 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 87.8 | 85.5 | 97 | 90.4 | 99 | 6 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 87.8 | 85.6 | 98 | 88.7 | 97 | 4 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 87.8 | 91.4 | 104 | 96.2 | 105 | 5 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 87.8 | 89.5 | 102 | 92.6 | 101 | 3 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 87.8 | 95.3 | 109 | 98.6 | 108 | 3 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 87.8 | 86.8 | 99 | 93.4 | 102 | 7 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 87.8 | 99.9 | 114 | 108 | 118 | 8 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 87.8 | 80.0 | 91 | 92.6 | 101 | 15 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 87.8 | 78.7 | 90 | 90.1 | 98 | 14 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 87.8 | 78.5 | 89 | 87.8 | 96 | 11 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 87.8 | 92.8 | 106 | 102 | 111 | 9 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 87.8 | 94.6 | 108 | 102 | 111 | 8 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 87.8 | 80.8 | 92 | 87.0 | 95 | 7 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 87.8 | 88.9 | 101 | 95.3 | 104 | 7 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 87.8 | 72.4 | 82 | 90.0 | 98 | 22 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 87.8 | 86.4 | 98 | 92.8 | 101 | 7 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 87.8 | 81.5 | 93 | 88.5 | 97 | 8 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 87.8 | 77.7 | 89 | 83.4 | 91 | 7 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 87.8 | 80.0 | 91 | 86.9 | 95 | 8 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 87.8 | 91.3 | 104 | 94.9 | 104 | 4 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 87.8 | 79.7 | 91 | 85.9 | 94 | 7 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 87.8 | 79.9 | 91 | 85.8 | 94 | 7 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 87.8 | 81.3 | 93 | 87.6 | 96 | 7 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 87.8 | 57.9 | 66* a | 62.8 | 69* a | 8 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 87.8 | 86.8 | 99 | 93.6 | 102 | 8 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 87.8 | 90.9 | 104 | 94.4 | 103 | 4 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 87.8 | 94.1 | 107 | 103 | 113 | 9 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 87.8 | 84.3 | 96 | 89.8 | 98 | 6 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 87.8 | 88.9 | 101 | 95.3 | 104 | 7 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 87.8 | 82.6 | 94 | 85.9 | 94 | 4 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 87.8 | 88.4 | 101 | 92.2 | 101 | 4 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 87.8 | 90.3 | 103 | 99.0 | 108 | 9 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 87.8 | 94.4 | 108 | 98.7 | 108 | 4 | 70-130/30 |

* = Outside of Control Limits.

6.4.1

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16931-1MS | M53139.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| MC16931-1MSD | M53140.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| MC16931-1 | M53124.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16931-1, MC16931-2, MC16931-3, MC16931-4

| CAS No. | Compound | MC16931-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 87.8 | 84.1 | 96 | 87.1 | 95 | 4 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 87.8 | 95.6 | 109 | 96.5 | 105 | 1 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 439 | 539 | 123 | 588 | 128 | 9 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 87.8 | 103 | 117 | 105 | 115 | 2 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 87.8 | 84.5 | 96 | 91.8 | 100 | 8 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 87.8 | 78.2 | 89 | 96.3 | 105 | 21 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 87.8 | 114 | 130 | 116 | 127 | 2 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 87.8 | 79.6 | 91 | 87.6 | 96 | 10 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 87.8 | 84.7 | 96 | 97.1 | 106 | 14 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 87.8 | 86.2 | 98 | 90.9 | 99 | 5 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 87.8 | 110 | 125 | 114 | 125 | 4 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 87.8 | 96.3 | 110 | 97.6 | 107 | 1 | 70-130/30 |
| 75-09-2 | Methylene chloride | 1.5 | J | 87.8 | 80.6 | 90 | 85.9 | 92 | 6 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 87.8 | 88.4 | 101 | 105 | 115 | 17 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 87.8 | 78.4 | 89 | 87.2 | 95 | 11 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 87.8 | 61.3 | 70 | 69.0 | 75 | 12 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 87.8 | 85.8 | 98 | 91.4 | 100 | 6 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 87.8 | 96.6 | 110 | 100 | 109 | 3 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 87.8 | 93.8 | 107 | 101 | 110 | 7 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 87.8 | 90.9 | 104 | 96.3 | 105 | 6 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 87.8 | 82.7 | 94 | 93.7 | 102 | 12 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 87.8 | 80.9 | 92 | 92.4 | 101 | 13 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 87.8 | 91.3 | 104 | 99.6 | 109 | 9 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 87.8 | 92.0 | 105 | 93.2 | 102 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 87.8 | 91.1 | 104 | 95.8 | 105 | 5 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 87.8 | 98.6 | 112 | 107 | 117 | 8 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 87.8 | 101 | 115 | 104 | 114 | 3 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 87.8 | 78.9 | 90 | 87.6 | 96 | 10 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 87.8 | 81.0 | 92 | 90.6 | 99 | 11 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 87.8 | 79.1 | 90 | 75.0 | 82 | 5 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 87.8 | 80.9 | 92 | 87.9 | 96 | 8 | 70-130/30 |
| | m,p-Xylene | ND | | 176 | 169 | 96 | 183 | 100 | 8 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 87.8 | 81.2 | 92 | 88.7 | 97 | 9 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 263 | 250 | 95 | 272 | 99 | 8 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16931-1MS | M53139.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| MC16931-1MSD | M53140.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |
| MC16931-1 | M53124.D | 1 | 12/27/12 | AMY | n/a | n/a | MSM1804 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16931-1, MC16931-2, MC16931-3, MC16931-4

| CAS No. | Surrogate Recoveries | MS | MSD | MC16931-1 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 84% | 84% | 85% | 70-130% |
| 2037-26-5 | Toluene-D8 | 89% | 87% | 87% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 81% | 80% | 80% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC17011-2MS | V14703.D | 10 | 12/28/12 | AMY | n/a | n/a | MSV597 |
| MC17011-2MSD | V14704.D | 10 | 12/28/12 | AMY | n/a | n/a | MSV597 |
| MC17011-2 | V14701.D | 1 | 12/28/12 | AMY | n/a | n/a | MSV597 |
| MC17011-2 | V14702.D | 10 | 12/28/12 | AMY | n/a | n/a | MSV597 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16931-5

| CAS No. | Compound | MC17011-2 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 37.6 | | 500 | 512 | 95 | 511 | 95 | 0 | 70-130/30 |
| 107-02-8 | Acrolein | 35.9 | | 2500 | 1170 | 45* [a] | 1390 | 54* [a] | 17 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 500 | 577 | 115 | 587 | 117 | 2 | 70-130/30 |
| 71-43-2 | Benzene | 842 [b] | | 500 | 1310 | 262* [a] | 1330 | 266* [a] | 2 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 500 | 550 | 110 | 549 | 110 | 0 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 500 | 523 | 105 | 535 | 107 | 2 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 500 | 470 | 94 | 480 | 96 | 2 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 500 | 435 | 87 | 443 | 89 | 2 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 500 | 492 | 98 | 502 | 100 | 2 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 500 | 510 | 102 | 503 | 101 | 1 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | 13.7 | | 500 | 606 | 118 | 620 | 121 | 2 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | 11.1 | | 500 | 550 | 108 | 562 | 110 | 2 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | 1.5 | | 500 | 527 | 105 | 536 | 107 | 2 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 500 | 491 | 98 | 513 | 103 | 4 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 500 | 513 | 103 | 537 | 107 | 5 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 500 | 497 | 99 | 507 | 101 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 500 | 540 | 108 | 548 | 110 | 1 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 500 | 149 | 30* [a] | ND | 0* [a] | 200* [c] | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 500 | 534 | 107 | 545 | 109 | 2 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 500 | 457 | 91 | 484 | 97 | 6 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 500 | 514 | 103 | 517 | 103 | 1 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 500 | 534 | 107 | 537 | 107 | 1 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 500 | 438 | 88 | 448 | 90 | 2 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 500 | 508 | 102 | 517 | 103 | 2 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 500 | 510 | 102 | 515 | 103 | 1 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 500 | 522 | 104 | 528 | 106 | 1 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 500 | 400 | 80 | 417 | 83 | 4 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 500 | 546 | 109 | 556 | 111 | 2 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 500 | 525 | 105 | 530 | 106 | 1 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 500 | 568 | 114 | 575 | 115 | 1 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 500 | 522 | 104 | 533 | 107 | 2 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 500 | 530 | 106 | 539 | 108 | 2 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 500 | 537 | 107 | 550 | 110 | 2 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 500 | 523 | 105 | 527 | 105 | 1 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 500 | 680 | 136* [a] | 717 | 143* [a] | 5 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 500 | 569 | 114 | 581 | 116 | 2 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC17011-2MS | V14703.D | 10 | 12/28/12 | AMY | n/a | n/a | MSV597 |
| MC17011-2MSD | V14704.D | 10 | 12/28/12 | AMY | n/a | n/a | MSV597 |
| MC17011-2 | V14701.D | 1 | 12/28/12 | AMY | n/a | n/a | MSV597 |
| MC17011-2 | V14702.D | 10 | 12/28/12 | AMY | n/a | n/a | MSV597 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16931-5

| CAS No. | Compound | MC17011-2 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 500 | 463 | 93 | 476 | 95 | 3 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 500 | 481 | 96 | 491 | 98 | 2 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 2500 | 1970 | 79 | 2080 | 83 | 5 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 500 | 527 | 105 | 529 | 106 | 0 | 72-139/30 |
| 100-41-4 | Ethylbenzene | 119 | | 500 | 632 | 103 | 644 | 105 | 2 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 500 | 530 | 106 | 589 | 118 | 11 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 500 | 525 | 105 | 523 | 105 | 0 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | 66.8 | | 500 | 592 | 105 | 597 | 106 | 1 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | 4.7 | | 500 | 595 | 118 | 608 | 121 | 2 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 500 | 534 | 107 | 553 | 111 | 3 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 500 | 515 | 103 | 519 | 104 | 1 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 500 | 547 | 109 | 556 | 111 | 2 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 500 | 523 | 105 | 528 | 106 | 1 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 500 | 470 | 94 | 601 | 120 | 24 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 125 | | 500 | 638 | 103 | 646 | 104 | 1 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 500 | 497 | 99 | 510 | 102 | 3 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 500 | 470 | 94 | 481 | 96 | 2 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 500 | 521 | 104 | 521 | 104 | 0 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | 1.5 | | 500 | 558 | 111 | 571 | 114 | 2 | 70-130/30 |
| 108-88-3 | Toluene | 29.0 | | 500 | 558 | 106 | 571 | 108 | 2 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 500 | 449 | 90 | 632 | 126 | 34* [c] | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 500 | 518 | 104 | 605 | 121 | 15 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 500 | 576 | 115 | 601 | 120 | 4 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 500 | 533 | 107 | 544 | 109 | 2 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 500 | 528 | 106 | 540 | 108 | 2 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 500 | 572 | 114 | 591 | 118 | 3 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 500 | 492 | 98 | 493 | 99 | 0 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 500 | 536 | 107 | 540 | 108 | 1 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 500 | 546 | 109 | 551 | 110 | 1 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 500 | 573 | 115 | 581 | 116 | 1 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 500 | 464 | 93 | 476 | 95 | 3 | 70-130/30 |
| | m,p-Xylene | 4.5 | | 1000 | 1050 | 105 | 1080 | 108 | 3 | 70-130/30 |
| 95-47-6 | o-Xylene | 8.9 | | 500 | 520 | 102 | 537 | 106 | 3 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 13.4 | | 1500 | 1570 | 104 | 1620 | 107 | 3 | 70-130/30 |

* = Outside of Control Limits.

6.4.2

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC17011-2MS | V14703.D | 10 | 12/28/12 | AMY | n/a | n/a | MSV597 |
| MC17011-2MSD | V14704.D | 10 | 12/28/12 | AMY | n/a | n/a | MSV597 |
| MC17011-2 | V14701.D | 1 | 12/28/12 | AMY | n/a | n/a | MSV597 |
| MC17011-2 | V14702.D | 10 | 12/28/12 | AMY | n/a | n/a | MSV597 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16931-5

| CAS No. | Surrogate Recoveries | MS | MSD | MC17011-2 | MC17011-2 | Limits |
|---|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | 94% | 87% | 86% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 96% | 97% | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | 97% | 97% | 99% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Resnlt is from Run #2.
(c) High RPD due to possible matrix interference and/or sample non-homogeneity.

* = Outside of Control Limits.

# Volatile Internal Standard Area Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1804-CC1800 | Injection Date: | 12/27/12 |
| Lab File ID: | M53117.D | Injection Time: | 09:29 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 180953 | 9.36 | 249177 | 10.24 | 125697 | 13.52 | 143873 | 16.08 | 41987 | 6.86 |
| Upper Limit [a] | 361906 | 9.86 | 498354 | 10.74 | 251394 | 14.02 | 287746 | 16.58 | 83974 | 7.36 |
| Lower Limit [b] | 90477 | 8.86 | 124589 | 9.74 | 62849 | 13.02 | 71937 | 15.58 | 20994 | 6.36 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1804-BS | 165956 | 9.36 | 231215 | 10.24 | 116167 | 13.52 | 135462 | 16.08 | 86522[c] | 6.86 |
| MSM1804-BSD | 159568 | 9.36 | 221915 | 10.24 | 112127 | 13.52 | 129219 | 16.08 | 82403 | 6.86 |
| MSM1804-MB | 167750 | 9.36 | 227098 | 10.24 | 107818 | 13.52 | 131684 | 16.08 | 39001 | 6.86 |
| ZZZZZZ | 176788 | 9.36 | 239941 | 10.24 | 116961 | 13.52 | 141990 | 16.08 | 81691 | 6.86 |
| ZZZZZZ | 171921 | 9.36 | 233256 | 10.24 | 110523 | 13.52 | 129467 | 16.08 | 29420 | 6.86 |
| MC16931-1 | 173355 | 9.36 | 234255 | 10.24 | 113283 | 13.52 | 139095 | 16.08 | 68227 | 6.85 |
| MC16931-2 | 165986 | 9.36 | 225926 | 10.24 | 110220 | 13.52 | 137043 | 16.09 | 57397 | 6.86 |
| MC16931-3 | 173567 | 9.36 | 233811 | 10.24 | 113973 | 13.52 | 135012 | 16.09 | 70000 | 6.85 |
| MC16931-4 | 172216 | 9.36 | 231603 | 10.24 | 112475 | 13.52 | 135807 | 16.09 | 64674 | 6.86 |
| ZZZZZZ | 161352 | 9.36 | 220727 | 10.24 | 106277 | 13.52 | 124550 | 16.09 | 74396 | 6.85 |
| ZZZZZZ | 158063 | 9.36 | 212010 | 10.24 | 96281 | 13.52 | 97794 | 16.08 | 67733 | 6.86 |
| ZZZZZZ | 168054 | 9.36 | 225545 | 10.24 | 103854 | 13.52 | 111521 | 16.09 | 66759 | 6.86 |
| ZZZZZZ | 177084 | 9.36 | 240613 | 10.24 | 116492 | 13.52 | 143940 | 16.08 | 68746 | 6.86 |
| ZZZZZZ | 150425 | 9.36 | 207559 | 10.24 | 101282 | 13.52 | 119116 | 16.08 | 42432 | 6.86 |
| ZZZZZZ | 171355 | 9.36 | 230735 | 10.24 | 111487 | 13.52 | 135090 | 16.08 | 65507 | 6.86 |
| ZZZZZZ | 174550 | 9.36 | 237270 | 10.24 | 114737 | 13.52 | 139052 | 16.08 | 64301 | 6.86 |
| ZZZZZZ | 143650 | 9.36 | 191424 | 10.24 | 72129 | 13.52 | 43065[d] | 16.09 | 41871 | 6.86 |
| ZZZZZZ | 153448 | 9.36 | 205619 | 10.24 | 82908 | 13.52 | 60325[d] | 16.09 | 45746 | 6.86 |
| MC16931-1MS | 167774 | 9.36 | 229024 | 10.24 | 117245 | 13.52 | 135696 | 16.08 | 73309 | 6.86 |
| MC16931-1MSD | 159576 | 9.36 | 222745 | 10.24 | 111870 | 13.52 | 130524 | 16.08 | 77650 | 6.85 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minntes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Ontside control limits. Target analytes not associated with this internal standard.
(d) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Volatile Internal Standard Area Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV597-CC595 | Injection Date: | 12/27/12 |
| Lab File ID: | V14680.D | Injection Time: | 21:22 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 373815 | 6.56 | 630360 | 7.74 | 324846 | 11.09 | 281678 | 13.33 | 73473 | 3.51 |
| Upper Limit [a] | 747630 | 7.06 | 1260720 | 8.24 | 649692 | 11.59 | 563356 | 13.83 | 146946 | 4.01 |
| Lower Limit [b] | 186908 | 6.06 | 315180 | 7.24 | 162423 | 10.59 | 140839 | 12.83 | 36737 | 3.01 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSV597-BS | 380842 | 6.56 | 641301 | 7.74 | 331782 | 11.09 | 283814 | 13.33 | 76584 | 3.51 |
| MSV597-MB | 377429 | 6.56 | 640710 | 7.74 | 320128 | 11.09 | 267721 | 13.32 | 72710 | 3.51 |
| MC17011-2 | 342457 | 6.54 | 580507 | 7.72 | 299207 | 11.08 | 258452 | 13.31 | 76719 | 3.50 |
| MC17011-2 | 361691 | 6.53 | 612470 | 7.72 | 309594 | 11.08 | 259622 | 13.31 | 76459 | 3.49 |
| MC17011-2MS | 377084 | 6.53 | 638555 | 7.72 | 330423 | 11.07 | 283729 | 13.31 | 74501 | 3.48 |
| MC17011-2MSD | 367361 | 6.53 | 623228 | 7.72 | 322341 | 11.07 | 281197 | 13.31 | 74655 | 3.49 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV597-CC595 | Injection Date: | 12/28/12 |
| Lab File ID: | V14708.D | Injection Time: | 11:34 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 361916 | 6.53 | 617827 | 7.72 | 319048 | 11.07 | 274560 | 13.31 | 73799 | 3.49 |
| Upper Limit [a] | 723832 | 7.03 | 1235654 | 8.22 | 638096 | 11.57 | 549120 | 13.81 | 147598 | 3.99 |
| Lower Limit [b] | 180958 | 6.03 | 308914 | 7.22 | 159524 | 10.57 | 137280 | 12.81 | 36900 | 2.99 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSV597-BS1 | 373356 | 6.53 | 641870 | 7.72 | 329391 | 11.08 | 282733 | 13.32 | 74045 | 3.49 |
| MSV597-MB1 | 361465 | 6.53 | 619779 | 7.72 | 312351 | 11.07 | 260397 | 13.31 | 72894 | 3.49 |
| MC16931-5 | 363756 | 6.52 | 621449 | 7.71 | 314602 | 11.07 | 258396 | 13.31 | 70454 | 3.48 |
| ZZZZZZ | 357390 | 6.53 | 615389 | 7.72 | 308431 | 11.07 | 253865 | 13.31 | 68810 | 3.48 |
| ZZZZZZ | 351460 | 6.52 | 603528 | 7.72 | 306862 | 11.07 | 253907 | 13.31 | 70295 | 3.48 |
| ZZZZZZ | 350468 | 6.53 | 601314 | 7.72 | 303765 | 11.07 | 251285 | 13.31 | 62995 | 3.49 |
| ZZZZZZ | 345990 | 6.52 | 600957 | 7.71 | 309065 | 11.07 | 252892 | 13.31 | 63845 | 3.48 |
| ZZZZZZ | 347204 | 6.52 | 599977 | 7.71 | 302970 | 11.07 | 248961 | 13.31 | 64792 | 3.48 |
| ZZZZZZ | 344562 | 6.52 | 594111 | 7.71 | 300670 | 11.07 | 247830 | 13.31 | 64874 | 3.47 |
| ZZZZZZ | 344624 | 6.52 | 588123 | 7.71 | 301512 | 11.07 | 244378 | 13.31 | 63574 | 3.47 |
| ZZZZZZ | 338134 | 6.52 | 584691 | 7.71 | 296899 | 11.07 | 241203 | 13.31 | 66319 | 3.48 |
| ZZZZZZ | 335742 | 6.52 | 576324 | 7.71 | 295579 | 11.07 | 241818 | 13.31 | 60642 | 3.47 |
| ZZZZZZ | 334594 | 6.53 | 575232 | 7.72 | 291791 | 11.07 | 237343 | 13.31 | 58116 | 3.49 |
| ZZZZZZ | 332685 | 6.52 | 574228 | 7.71 | 293020 | 11.07 | 239105 | 13.31 | 62658 | 3.48 |
| ZZZZZZ | 325872 | 6.53 | 560207 | 7.72 | 284684 | 11.07 | 232693 | 13.31 | 59595 | 3.48 |
| ZZZZZZ | 331138 | 6.52 | 570867 | 7.71 | 292733 | 11.07 | 236634 | 13.31 | 62115 | 3.48 |
| ZZZZZZ | 322173 | 6.52 | 553558 | 7.71 | 283327 | 11.07 | 226503 | 13.31 | 58503 | 3.47 |
| ZZZZZZ | 328846 | 6.52 | 562430 | 7.71 | 288941 | 11.07 | 236739 | 13.31 | 62818 | 3.48 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Surrogate Recovery Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC16931-5 | V14714.D | 86.0 | 94.0 | 97.0 |
| MC17011-2MS | V14703.D | 94.0 | 97.0 | 98.0 |
| MC17011-2MSD | V14704.D | 94.0 | 96.0 | 97.0 |
| MSV597-BS1 | V14709.D | 94.0 | 96.0 | 98.0 |
| MSV597-MB1 | V14713.D | 88.0 | 95.0 | 97.0 |
| MSV597-MB | V14683.D | 86.0 | 94.0 | 96.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Tolnene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC16931-1 | M53124.D | 85.0 | 87.0 | 80.0 |
| MC16931-2 | M53125.D | 85.0 | 87.0 | 78.0 |
| MC16931-3 | M53126.D | 83.0 | 88.0 | 82.0 |
| MC16931-4 | M53127.D | 82.0 | 88.0 | 82.0 |
| MC16931-1MS | M53139.D | 84.0 | 89.0 | 81.0 |
| MC16931-1MSD | M53140.D | 84.0 | 87.0 | 80.0 |
| MSM1804-BS | M53118.D | 86.0 | 88.0 | 81.0 |
| MSM1804-BSD | M53119.D | 84.0 | 87.0 | 80.0 |
| MSM1804-MB | M53121.D | 81.0 | 87.0 | 79.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

New England ACCUTEST LABORATORIES

## GC Volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31480-MB | BB44997.D | 1 | 12/19/12 | CZ | 12/18/12 | OP31480 | GBB2725 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16931-1, MC16931-2, MC16931-3, MC16931-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 2.5 | 1.1 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.5 | 0.96 | ug/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 114% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 118% | 61-167% |

# Method Blank Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31513-MB | BB45031A.D | 1 | 12/21/12 | CZ | 12/21/12 | OP31513 | GBB2726 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16931-5



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.015 | 0.013 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.015 | 0.010 | ug/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 101% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 94% | 36-173% |

# Blank Spike Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31480-BS | BB44998.D | 1 | 12/19/12 | CZ | 12/18/12 | OP31480 | GBB2725 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16931-1, MC16931-2, MC16931-3, MC16931-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 33.3 | 38.9 | 117 | 59-142 |
| 106-93-4 | 1,2-Dibromoethane | 33.3 | 41.9 | 126 | 56-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 110% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 116% | 61-167% |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31513-BS | BB45032A.D | 1 | 12/21/12 | CZ | 12/21/12 | OP31513 | GBB2726 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16931-5

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 0.071 | 0.061 | 86 | 60-140 |
| 106-93-4 | 1,2-Dibromoethane | 0.071 | 0.063 | 89 | 60-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 103% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 96% | 36-173% |

7.2.2

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31480-MS | BB44999.D | 1 | 12/19/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| OP31480-MSD | BB45000.D | 1 | 12/19/12 | CZ | 12/18/12 | OP31480 | GBB2725 |
| MC16889-1 | BB45003.D | 1 | 12/19/12 | CZ | 12/18/12 | OP31480 | GBB2725 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16931-1, MC16931-2, MC16931-3, MC16931-4



| CAS No. | Compound | MC16889-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 74.7 | 85.1 | 114 | 86.5 | 116 | 2 | 40-156/27 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 74.7 | 96.4 | 129 | 97.5 | 131 | 1 | 48-141/27 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC16889-1 | Limits |
|---|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 99% | 105% | 101% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 114% | 123% | 115% | 61-167% |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31513-MS | BB45033A.D | 1 | 12/21/12 | CZ | 12/21/12 | OP31513 | GBB2726 |
| OP31513-MSD | BB45034A.D | 1 | 12/21/12 | CZ | 12/21/12 | OP31513 | GBB2726 |
| MC17000-5 | BB45035A.D | 1 | 12/21/12 | CZ | 12/21/12 | OP31513 | GBB2726 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16931-5



| CAS No. | Compound | MC17000-5 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 0.0698 | 0.059 | 85 | 0.063 | 90 | 7 | 64-141/29 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 0.0698 | 0.063 | 90 | 0.065 | 93 | 3 | 63-163/27 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC17000-5 | Limits |
|---|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 99% | 104% | 99% | 36-173% |
| 460-00-4 | Bromofluorobenzene (S) | 95% | 100% | 95% | 36-173% |

* = Outside of Control Limits.

# Volatile Surrogate Recovery Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8011 Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] | S1 [b] |
|---|---|---|---|
| MC16931-5 | BB45037.D | 99.0 | 94.0 |
| OP31513-BS | BB45032A.D | 103.0 | 96.0 |
| OP31513-MB | BB45031A.D | 101.0 | 94.0 |
| OP31513-MS | BB45033A.D | 99.0 | 95.0 |
| OP31513-MSD | BB45034A.D | 104.0 | 100.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Bromofluorobenzene (S) | 36-173% |

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2

# Volatile Surrogate Recovery Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8011 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] | S1 [b] |
|---|---|---|---|
| MC16931-1 | BB45017.D | 116.0 | 125.0 |
| MC16931-2 | BB45019.D | 119.0 | 124.0 |
| MC16931-3 | BB45020.D | 112.0 | 121.0 |
| MC16931-4 | BB45021.D | 115.0 | 124.0 |
| OP31480-BS | BB44998.D | 110.0 | 116.0 |
| OP31480-MB | BB44997.D | 114.0 | 118.0 |
| OP31480-MS | BB44999.D | 99.0 | 114.0 |
| OP31480-MSD | BB45000.D | 105.0 | 123.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Bromofluorobenzene (S) | 61-167% |

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2

# GC Surrogate Retention Time Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBB2726-ICC2726 | Injection Date: | 12/21/12 |
| Lab File ID: | BB45025.D | Injection Time: | 17:14 |
| Instrument ID: | GCBB | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 3.38 | 3.62 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| ZZZZZZ | BB45029A.D | 12/21/12 | 19:02 | 3.38 | 3.62 |
| ZZZZZZ | BB45029B.D | 12/21/12 | 19:02 | 3.38 | 3.62 |
| OP31512-MB | BB45031.D | 12/21/12 | 19:56 | 3.38 | 3.62 |
| OP31513-MB | BB45031A.D | 12/21/12 | 19:56 | 3.38 | 3.62 |
| OP31512-BS | BB45032.D | 12/21/12 | 20:23 | 3.38 | 3.62 |
| OP31513-BS | BB45032A.D | 12/21/12 | 20:23 | 3.38 | 3.62 |
| OP31512-MS | BB45033.D | 12/21/12 | 20:50 | 3.38 | 3.62 |
| OP31513-MS | BB45033A.D | 12/21/12 | 20:50 | 3.38 | 3.62 |
| OP31512-MSD | BB45034.D | 12/21/12 | 21:17 | 3.38 | 3.62 |
| OP31513-MSD | BB45034A.D | 12/21/12 | 21:17 | 3.38 | 3.62 |
| MC16984-9 | BB45035.D | 12/21/12 | 21:44 | 3.38 | 3.62 |
| MC17000-5 | BB45035A.D | 12/21/12 | 21:44 | 3.38 | 3.62 |
| ZZZZZZ | BB45036.D | 12/21/12 | 22:10 | 3.38 | 3.62 |
| MC16931-5 | BB45037.D | 12/21/12 | 22:37 | 3.38 | 3.62 |
| ZZZZZZ | BB45038.D | 12/21/12 | 23:04 | 3.38 | 3.62 |
| GBB2726-ECC272B | BB45039.D | 12/22/12 | 06:22 | 3.38 | 3.61 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

# GC Surrogate Retention Time Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBB2725-ICC2725 | Injection Date: | 12/19/12 |
| Lab File ID: | BB44991.D | Injection Time: | 17:58 |
| Instrument ID: | GCBB | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 3.47 | 3.70 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| OP31480-MB | BB44997.D | 12/19/12 | 20:38 | 3.47 | 3.71 |
| OP31480-BS | BB44998.D | 12/19/12 | 21:05 | 3.47 | 3.70 |
| OP31480-MS | BB44999.D | 12/19/12 | 21:32 | 3.47 | 3.71 |
| OP31480-MSD | BB45000.D | 12/19/12 | 21:58 | 3.47 | 3.71 |
| OP31480-MS2 | BB45001.D | 12/19/12 | 22:25 | 3.47 | 3.71 |
| OP31480-MSD2 | BB45002.D | 12/19/12 | 22:52 | 3.47 | 3.71 |
| MC16889-1 | BB45003.D | 12/19/12 | 23:19 | 3.47 | 3.71 |
| ZZZZZZ | BB45004.D | 12/19/12 | 23:45 | 3.47 | 3.71 |
| ZZZZZZ | BB45005.D | 12/20/12 | 00:12 | 3.47 | 3.71 |
| ZZZZZZ | BB45006.D | 12/20/12 | 00:39 | 3.47 | 3.71 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

# GC Surrogate Retention Time Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBB2725-CC2725 | Injection Date: | 12/20/12 |
| Lab File ID: | BB45007.D | Injection Time: | 01:06 |
| Instrument ID: | GCBB | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 3.47 | 3.70 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| ZZZZZZ | BB45008.D | 12/20/12 | 01:32 | 3.47 | 3.71 |
| ZZZZZZ | BB45009.D | 12/20/12 | 01:59 | 3.47 | 3.71 |
| ZZZZZZ | BB45010.D | 12/20/12 | 02:26 | 0.00 | 0.00 |
| ZZZZZZ | BB45011.D | 12/20/12 | 02:52 | 0.00 | 0.00 |
| ZZZZZZ | BB45012.D | 12/20/12 | 03:19 | 3.47 | 3.71 |
| ZZZZZZ | BB45013.D | 12/20/12 | 03:46 | 3.47 | 3.71 |
| MC16889-12 | BB45014.D | 12/20/12 | 04:13 | 3.47 | 3.71 |
| ZZZZZZ | BB45015.D | 12/20/12 | 04:40 | 3.47 | 3.71 |
| ZZZZZZ | BB45016.D | 12/20/12 | 05:07 | 3.47 | 3.71 |
| MC16931-1 | BB45017.D | 12/20/12 | 05:33 | 3.47 | 3.71 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #I
(b) Retention time from GC signal #2

# GC Surrogate Retention Time Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBB2725-CC2725 | Injection Date: | 12/20/12 |
| Lab File ID: | BB45018.D | Injection Time: | 06:00 |
| Instrument ID: | GCBB | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 3.47 | 3.71 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| MC16931-2 | BB45019.D | 12/20/12 | 06:27 | 3.47 | 3.71 |
| MC16931-3 | BB45020.D | 12/20/12 | 06:54 | 3.47 | 3.71 |
| MC16931-4 | BB45021.D | 12/20/12 | 07:21 | 3.47 | 3.71 |
| GBB2725-ECC272B | BB45022.D | 12/20/12 | 07:47 | 3.47 | 3.71 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

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## General Chemistry

# QC Data Summaries

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Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC16931
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| **Sample:** MC16931-1 | **Analyzed:** 17-DEC-12 by MA | | **Method:** SM21 2540 B MOD. |
| **ClientID:** VMP-54-15 | | | |
| Wet Weight (Total) | 27.32 | g | |
| Tare Weight | 18.841 | g | |
| Dry Weight (Total) | 26.871 | g | |
| Solids, Percent | 94.7 | % | |
| **Sample:** MC16931-2 | **Analyzed:** 17-DEC-12 by MA | | **Method:** SM21 2540 B MOD. |
| **ClientID:** VMP-54-15 DUP | | | |
| Wet Weight (Total) | 27.735 | g | |
| Tare Weight | 21.054 | g | |
| Dry Weight (Total) | 27.354 | g | |
| Solids, Percent | 94.3 | % | |
| **Sample:** MC16931-3 | **Analyzed:** 17-DEC-12 by MA | | **Method:** SM21 2540 B MOD. |
| **ClientID:** VMP-54-25 | | | |
| Wet Weight (Total) | 28.371 | g | |
| Tare Weight | 20.531 | g | |
| Dry Weight (Total) | 28.114 | g | |
| Solids, Percent | 96.7 | % | |
| **Sample:** MC16931-4 | **Analyzed:** 17-DEC-12 by MA | | **Method:** SM21 2540 B MOD. |
| **ClientID:** VMP-54-31 | | | |
| Wet Weight (Total) | 29.938 | g | |
| Tare Weight | 20.742 | g | |
| Dry Weight (Total) | 29.664 | g | |
| Solids, Percent | 97 | % | |

8.1
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# Roxana Drilling 2013 Data Review

**Laboratory SDG: MC16961**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 3/5/2013**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| VMP-55-13 | VMP-55-25 |
| VMP-55-31 | VMP-55-31-Dup |
| TRIP BLANK | |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

No, the trip blank listed on the COC was inadvertently not included in the cooler; and therefore was not analyzed. No qualification of data was required due to trip blank contamination in other SDGs in this sampling program.

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS/LCSD recoveries were outside evaluation criteria. The internal standard area recovery for tert buyl alcohol-$d_9$ for sample VMP-55-13 and LCS MSM1806-BS was outside criteria. Benzene and methyl tert buty ether were qualified due to field duplicate RPD outside evaluation criteria in field duplicate pair VMP-55-31/VMP-55-31-Dup. Professional judgment was used to qualify the common lab contaminant acetone in sample VMP-55-31. These issues are addressed further in the appropriate sections below.

The cooler receipt form did not indicate any problems. Please see Section 1.0 of this review for further cooler receipt information.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSM1806-BS | VOCs | Acetone | **64** | NA | 70-130 |
| MSM1806-BS | VOCs | Chloromethane | **132** | NA | 70-130 |
| MSM1806-BS | VOCs | Dichlorodifluoromethane | **160** | NA | 70-130 |
| MSM1807-BS/BSD | VOCs | Acetone | **66**/73 | 9 | 70-130/25 |
| MSM1807-BS/BSD | VOCs | Chloromethane | 120/**132** | 10 | 70-130/25 |
| MSM1807-BS/BSD | VOCs | Dichlorodifluoromethane | **135/154** | 14 | 70-130/25 |
| MSM1807-BS/BSD | VOCs | Trichlorofluoromethane | 117/**132** | 12 | 70-130/25 |

Analytical data that required qualification based on LCS/LCSD data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| VMP-55-13 | VOCs | Acetone | **UJ** |
| VMP-55-25 | VOCs | Acetone | **UJ** |
| VMP-55-31-Dup | VOCs | Acetone | **UJ** |
| VMP-55-31 | VOCs | Acetone | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, although not requested, sample VMP-55-25 was spiked and analyzed for VOCs by 8011.

*Were MS/MSD recoveries within evaluation criteria?*

Yes

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

No

| Sample ID | Parameter | Analyte | IS Area Recovery | IS Criteria |
|---|---|---|---|---|
| MSM1806-BS | VOCs | Tert butyl alcohol-$d_9$ | **81702** | 19719-78874 |
| VMP-55-13 | VOCs | Tert butyl alcohol-$d_9$ | **81175** | 19719-78874 |

Analytical data that required qualification based on internal standard data are included in the following table. Analytical data reported as non-detect and associated with internal standard area recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS MSM1806-BS is a quality control sample and is not

qualified.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| VMP-55-13 | VOCs | Methyl tert butyl ether | **J** |

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

Yes

| Field ID | Field Duplicate ID |
|---|---|
| VMP-55-31 | VMP-55-31-Dup |

*Were field duplicates within evaluation criteria?*

No

| Field ID | Field Duplicate ID | Parameter | Analyte | RPD | Qualification |
|---|---|---|---|---|---|
| VMP-55-31 | VMP-55-31-Dup | VOCs | Benzene | **200** | **UJ/J** |
| VMP-55-31 | VMP-55-31-Dup | VOCs | Methyl tert butyl ether | **200** | **UJ/J** |

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

Yes, professional judgment was also used to qualify the common laboratory contaminant acetone reported at concentrations more than two times (2X) the reporting limit (RL).

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| VMP-55-31 | Acetone | 0.0339 mg/kg | **U** | Professional Judgment |

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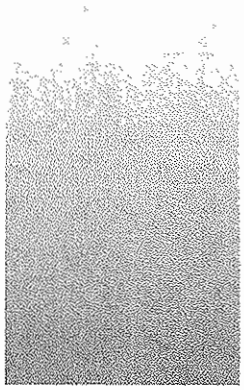
01/03/13





## Technical Report for

Shell Oil

URSMOSTL: Roxana Drilling, Roxana, IL

21562850.15000

Accutest Job Number: MC16961

Sampling Date: 12/17/12

Report to:

URS Corporation

elizabeth.kunkel@URS.com

ATTN: Elizabeth Kunkel

Reviewed on 3/5/2013

Total number of pages in report: **61**

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Reza Pand
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) WI (399080220) ISO 17025:2005 (L2235)

This report shall not be reprodnced, except in its entirety, without the written approval of Accutest Laboratories.
Test results relate only to samples analyzed.



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# Sample Summary

Shell Oil

Job No: MC16961

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562850.15000

| Sample Number | Collected Date | Time By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|
| MC16961-1 | 12/17/12 | 13:10 WPJS | 12/18/12 | SO | Soil | VMP-55-13 |
| MC16961-2 | 12/17/12 | 13:15 WPJS | 12/18/12 | SO | Soil | VMP-55-25 |
| MC16961-3 | 12/17/12 | 13:20 WPJS | 12/18/12 | SO | Soil | VMP-55-31 |
| MC16961-4 | 12/17/12 | 13:20 WPJS | 12/18/12 | SO | Soil | VMP-55-31-DUP |
| MC16961-5 | 12/17/12 | 00:00 WPJS | 12/18/12 | AQ | Trip Blank Water | TRIP BLANK |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

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# SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Shell Oil **Job No** MC16961

**Site:** URSMOSTL: Roxana Drilling, Roxana, IL **Report Date** 1/3/2013 3:03:07 PM

4 Sample(s) were collected on 12/17/2012 and were received at Accutest on 12/18/2012 properly preserved, at 2 Deg. C and intact. These Samples received an Accutest job number of MC16961. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report. 1-Chlorohexane was searched in the library search and reported only if detections were found.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** SO **Batch ID:** MSM1806

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16999-1MS, MC16999-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Acetone, Chloromethane, Dichlorodifluoromethane are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, Dichlorodifluoromethane, Naphthalene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for Chloromethane, Dichlorodifluoromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 2-Butanone (MEK), Hexachlorobutadiene are outside control limits for sample MC16999-1MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- MSM1806-BS, MC16961-1, MC16999-1MS, MC16999-1MSD for Tert Butyl Alcohol-D9: Outside control limits. Target analytes not associated with this internal standard.

**Matrix** SO **Batch ID:** MSM1807

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC17066-2AMS, MC17066-2AMSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Acetone, Dichlorodifluoromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Blank Spike Duplicate Recovery(s) for Chloromethane, Dichlorodifluoromethane, Trichlorofluoromethane are ontside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Recovery(s) for 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 2-Chloroethyl vinyl ether, 2-Hexanone, Acetone, Acrolein, Bromobenzene, Bromoform, Chlorobenzene, Dibromochloromethane, Dichlorodifluoromethane, Hexachlorobutadiene, m,p-Xylene, n-Butylbenzene, n-Propylbenzene, Naphthalene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, Styrene, Xylene (total) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, 1,1,2-Trichloroethane, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dichlorobenzene, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,3-Dichloropropane, 1,4-Dichlorobenzene, 2-Chloroethyl vinyl ether, Acetone, Acrolein, Bromobenzene, Bromoform, Chlorobenzene, Chloromethane, cis-1,3-Dichloropropene, Dibromochloromethane, Dichlorodifluoromethane, Hexachlorobutadiene, Isopropylbenzene, m,p-Xylene, n-Butylbenzene, n-Propylbenzene, Naphthalene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, p-Isopropyltoluene, sec-Butylbenzene, Styrene, tert-Butylbenzene, trans-1,3-Dichloropropene, Xylene (total) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

## Volatiles by GC By Method SW846 8011

| Matrix SO | Batch ID: OP31493 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC16961-2MS, MC16961-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN41336 |
|---|---|

- Sample(s) MC16966-2DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC16961).

# Summary of Hits



Job Number: MC16961
Account: Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Collected: 12/17/12

| Lab Sample ID / Analyte | Client Sample ID | Result/ Qual | RL | MDL | Units | Method |
|---|---|---|---|---|---|---|
| MC16961-1 | VMP-55-13 | | | | | |
| Methyl Tert Butyl Ether | | 0.0272 | 0.0021 | 0.00030 | mg/kg | SW846 8260B |
| MC16961-2 | VMP-55-25 | | | | | |
| Benzene | | 0.0035 | 0.00051 | 0.00030 | mg/kg | SW846 8260B |
| MC16961-3 | VMP-55-31 | | | | | |
| Acetone | | 0.0339 | 0.0053 | 0.0013 | mg/kg | SW846 8260B |
| MC16961-4 | VMP-55-31-DUP | | | | | |
| Benzene | | 0.317 | 0.00051 | 0.00030 | mg/kg | SW846 8260B |
| n-Butylbenzene | | 0.0013 J | 0.0051 | 0.00019 | mg/kg | SW846 8260B |
| sec-Butylbenzene | | 0.0012 J | 0.0051 | 0.00024 | mg/kg | SW846 8260B |
| Ethylbenzene | | 0.0011 J | 0.0021 | 0.00025 | mg/kg | SW846 8260B |
| Isopropylbenzene | | 0.0011 J | 0.0051 | 0.00024 | mg/kg | SW846 8260B |
| Methyl Tert Butyl Ether | | 0.0110 | 0.0021 | 0.00030 | mg/kg | SW846 8260B |
| n-Propylbenzene | | 0.0011 J | 0.0051 | 0.0010 | mg/kg | SW846 8260B |
| Toluene | | 0.0011 J | 0.0051 | 0.00087 | mg/kg | SW846 8260B |
| m,p-Xylene | | 0.0013 J | 0.0021 | 0.00081 | mg/kg | SW846 8260B |
| o-Xylene | | 0.00072 J | 0.0021 | 0.00025 | mg/kg | SW846 8260B |
| Xylene (total) | | 0.0020 J | 0.0021 | 0.00025 | mg/kg | SW846 8260B |

## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-55-13 | | |
| Lab Sample ID: | MC16961-1 | Date Sampled: | 12/17/12 |
| Matrix: | SO - Soil | Date Received: | 12/18/12 |
| Method: | SW846 8260B | Percent Solids: | 76.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53176.D | 1 | 12/28/12 | AMY | n/a | n/a | MSM1806 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 6.24 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0052 | 0.0013 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 0.026 | 0.010 | mg/kg | |
| 107-13-1 | Acrylonitrile | ND | 0.026 | 0.0013 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.00052 | 0.00031 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0052 | 0.00023 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0052 | 0.00039 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0021 | 0.0021 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0021 | 0.00054 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0052 | 0.0013 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0052 | 0.00019 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0052 | 0.00024 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0052 | 0.00092 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0052 | 0.00017 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0021 | 0.00076 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0021 | 0.00029 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0052 | 0.0013 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0052 | 0.0021 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0021 | 0.00054 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0052 | 0.00049 | mg/kg | |
| 95-49-8 | o-Chlorotolnene | ND | 0.0052 | 0.0012 | mg/kg | |
| 106-43-4 | p-Chlorotolnene | ND | 0.0052 | 0.00024 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0021 | 0.00031 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0021 | 0.00023 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0021 | 0.00024 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0021 | 0.0012 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0021 | 0.00028 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0021 | 0.00030 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0021 | 0.00039 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0021 | 0.00032 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0021 | 0.00030 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP-55-13 | | |
| **Lab Sample ID:** | MC16961-1 | **Date Sampled:** | 12/17/12 |
| **Matrix:** | SO - Soil | **Date Received:** | 12/18/12 |
| **Method:** | SW846 8260B | **Percent Solids:** | 76.4 |
| **Project:** | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0021 | 0.00039 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0052 | 0.00024 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0052 | 0.00091 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0052 | 0.00028 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0021 | 0.00018 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0021 | 0.00052 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.026 | 0.026 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0052 | 0.00071 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.0021 | 0.00025 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0052 | 0.00049 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0052 | 0.00052 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0052 | 0.00024 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0052 | 0.00019 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | 0.0272 | 0.0021 | 0.00030 | mg/kg | J |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0052 | 0.00052 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0052 | 0.00052 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0021 | 0.0012 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.0052 | 0.0013 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0052 | 0.0011 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0052 | 0.00025 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0052 | 0.0010 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0021 | 0.00045 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0021 | 0.00024 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.0052 | 0.00089 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0052 | 0.00025 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0052 | 0.00024 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0021 | 0.00033 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0021 | 0.00077 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0021 | 0.00032 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0052 | 0.00031 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0052 | 0.00023 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0052 | 0.00022 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0052 | 0.00059 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0021 | 0.00029 | mg/kg | |
| | m,p-Xylene | ND | 0.0021 | 0.00083 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.0021 | 0.00025 | mg/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.0021 | 0.00025 | mg/kg | |

ND = Not detected  MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-55-13 | | |
| Lab Sample ID: | MC16961-1 | Date Sampled: | 12/17/12 |
| Matrix: | SO - Soil | Date Received: | 12/18/12 |
| Method: | SW846 8260B | Percent Solids: | 76.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 86% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 81% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-55-13 | | |
| Lab Sample ID: | MC16961-1 | Date Sampled: | 12/17/12 |
| Matrix: | SO - Soil | Date Received: | 12/18/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 76.4 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK20291.D | 1 | 12/28/12 | AP | 12/19/12 | OP31493 | GBK733 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.7 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0032 | 0.0014 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0032 | 0.0012 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 125% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 101% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-55-25 | | |
| Lab Sample ID: | MC16961-2 | Date Sampled: | 12/17/12 |
| Matrix: | SO - Soil | Date Received: | 12/18/12 |
| Method: | SW846 8260B | Percent Solids: | 94.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53177.D | 1 | 12/28/12 | AMY | n/a | n/a | MSM1806 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.13 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0051 | 0.0013 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 0.026 | 0.010 | mg/kg | |
| 107-13-1 | Acrylonitrile | ND | 0.026 | 0.0013 | mg/kg | |
| 71-43-2 | Benzene | 0.0035 | 0.00051 | 0.00030 | mg/kg | |
| 108-86-1 | Bromobenzene | ND | 0.0051 | 0.00023 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0051 | 0.00038 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0021 | 0.0021 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0021 | 0.00053 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0051 | 0.0013 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0051 | 0.00019 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0051 | 0.00024 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0051 | 0.00091 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0051 | 0.00017 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0021 | 0.00075 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0021 | 0.00028 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0051 | 0.0013 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0051 | 0.0021 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0021 | 0.00053 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0051 | 0.00048 | mg/kg | |
| 95-49-8 | o-Chlorotolnene | ND | 0.0051 | 0.0011 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0051 | 0.00023 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0021 | 0.00030 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0021 | 0.00022 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0021 | 0.00023 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0021 | 0.0012 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0021 | 0.00028 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0021 | 0.00030 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0021 | 0.00038 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0021 | 0.00031 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0021 | 0.00029 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-55-25 | | |
| Lab Sample ID: | MC16961-2 | Date Sampled: | 12/17/12 |
| Matrix: | SO - Soil | Date Received: | 12/18/12 |
| Method: | SW846 8260B | Percent Solids: | 94.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0021 | 0.00038 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0051 | 0.00024 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0051 | 0.00089 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0051 | 0.00027 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0021 | 0.00018 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0021 | 0.00051 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.026 | 0.026 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0051 | 0.00070 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.0021 | 0.00025 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0051 | 0.00048 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0051 | 0.00051 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0051 | 0.00024 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0051 | 0.00018 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0021 | 0.00030 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0051 | 0.00051 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0051 | 0.00051 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0021 | 0.0012 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.0051 | 0.0013 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0051 | 0.0010 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0051 | 0.00024 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0051 | 0.0010 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0021 | 0.00044 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0021 | 0.00024 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.0051 | 0.00087 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0051 | 0.00024 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0051 | 0.00024 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0021 | 0.00032 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0021 | 0.00076 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0021 | 0.00031 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0051 | 0.00030 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0051 | 0.00023 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0051 | 0.00022 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0051 | 0.00057 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0021 | 0.00028 | mg/kg | |
| | m,p-Xylene | ND | 0.0021 | 0.00081 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.0021 | 0.00025 | mg/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.0021 | 0.00025 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-55-25 | | |
| Lab Sample ID: | MC16961-2 | Date Sampled: | 12/17/12 |
| Matrix: | SO - Soil | Date Received: | 12/18/12 |
| Method: | SW846 8260B | Percent Solids: | 94.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 83% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates valne exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-55-25 | | |
| Lab Sample ID: | MC16961-2 | Date Sampled: | 12/17/12 |
| Matrix: | SO - Soil | Date Received: | 12/18/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 94.7 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK20292.D | 1 | 12/28/12 | AP | 12/19/12 | OP31493 | GBK733 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.1 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0026 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0026 | 0.0010 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 131% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 108% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-55-31 | | |
| Lab Sample ID: | MC16961-3 | Date Sampled: | 12/17/12 |
| Matrix: | SO - Soil | Date Received: | 12/18/12 |
| Method: | SW846 8260B | Percent Solids: | 87.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53198.D | 1 | 12/31/12 | AMY | n/a | n/a | MSM1807 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.39 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~0.0339~~ 0.0341 | ~~0.0053~~ | 0.0013 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 0.026 | 0.011 | mg/kg | |
| 107-13-1 | Acrylonitrile | ND | 0.026 | 0.0013 | mg/kg | |
| 71-43-2 | Benzene | ND | 0.00053 | 0.00031 | mg/kg | UJ |
| 108-86-1 | Bromobenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0053 | 0.00040 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0021 | 0.0021 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0021 | 0.00055 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0053 | 0.0013 | mg/kg | |
| 104-51-8 | n-Butylbenzene | ND | 0.0053 | 0.00019 | mg/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 0.0053 | 0.00093 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0053 | 0.00017 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0021 | 0.00077 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0021 | 0.00029 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0053 | 0.0013 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0053 | 0.0021 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0021 | 0.00055 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0053 | 0.00049 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0053 | 0.0012 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0053 | 0.00024 | mg/kg | |
| 124-48-1 | Dibromochloromethane | ND | 0.0021 | 0.00031 | mg/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 0.0021 | 0.00023 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0021 | 0.00024 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0021 | 0.0012 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0021 | 0.00029 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0021 | 0.00030 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0021 | 0.00039 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0021 | 0.00032 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0021 | 0.00030 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-55-31 | | |
| Lab Sample ID: | MC16961-3 | Date Sampled: | 12/17/12 |
| Matrix: | SO - Soil | Date Received: | 12/18/12 |
| Method: | SW846 8260B | Percent Solids: | 87.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |



VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0021 | 0.00039 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0053 | 0.00024 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0053 | 0.00092 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0053 | 0.00028 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0021 | 0.00018 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0021 | 0.00053 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.026 | 0.026 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0053 | 0.00072 | mg/kg | |
| 100-41-4 | Ethylbenzene | ND | 0.0021 | 0.00026 | mg/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0053 | 0.00049 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0053 | 0.00053 | mg/kg | |
| 98-82-8 | Isopropylbenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0053 | 0.00019 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 0.0021 | 0.00031 | mg/kg | UJ |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0053 | 0.00053 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0053 | 0.00052 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0021 | 0.0012 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.0053 | 0.0013 | mg/kg | |
| 103-65-1 | n-Propylbenzene | ND | 0.0053 | 0.0011 | mg/kg | |
| 100-42-5 | Styrene | ND | 0.0053 | 0.00025 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0053 | 0.0011 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0021 | 0.00045 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0021 | 0.00024 | mg/kg | |
| 108-88-3 | Toluene | ND | 0.0053 | 0.00090 | mg/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0053 | 0.00025 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0021 | 0.00033 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0021 | 0.00078 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0021 | 0.00032 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0053 | 0.00031 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0053 | 0.00024 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0053 | 0.00023 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0053 | 0.00059 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0021 | 0.00029 | mg/kg | |
| | m,p-Xylene | ND | 0.0021 | 0.00083 | mg/kg | |
| 95-47-6 | o-Xylene | ND | 0.0021 | 0.00025 | mg/kg | |
| 1330-20-7 | Xylene (total) | ND | 0.0021 | 0.00025 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates valne exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-55-31 | | |
| Lab Sample ID: | MC16961-3 | Date Sampled: | 12/17/12 |
| Matrix: | SO - Soil | Date Received: | 12/18/12 |
| Method: | SW846 8260B | Percent Solids: | 87.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 80% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-55-31 | | |
| Lab Sample ID: | MC16961-3 | Date Sampled: | 12/17/12 |
| Matrix: | SO - Soil | Date Received: | 12/18/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 87.6 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK20293.D | 1 | 12/28/12 | AP | 12/19/12 | OP31493 | GBK733 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.1 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0028 | 0.0013 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0028 | 0.0011 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 120% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 102% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-55-31-DUP | | |
| Lab Sample ID: | MC16961-4 | Date Sampled: | 12/17/12 |
| Matrix: | SO - Soil | Date Received: | 12/18/12 |
| Method: | SW846 8260B | Percent Solids: | 88.5 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M53179.D | 1 | 12/28/12 | AMY | n/a | n/a | MSM1806 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.49 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 0.0051 | 0.0013 | mg/kg | UJ |
| 107-02-8 | Acrolein | ND | 0.026 | 0.010 | mg/kg | |
| 107-13-1 | Acrylonitrile | ND | 0.026 | 0.0013 | mg/kg | |
| 71-43-2 | Benzene | 0.317 | 0.00051 | 0.00030 | mg/kg | J |
| 108-86-1 | Bromobenzene | ND | 0.0051 | 0.00023 | mg/kg | |
| 74-97-5 | Bromochloromethane | ND | 0.0051 | 0.00038 | mg/kg | |
| 75-27-4 | Bromodichloromethane | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-25-2 | Bromoform | ND | 0.0021 | 0.0021 | mg/kg | |
| 74-83-9 | Bromomethane | ND | 0.0021 | 0.00053 | mg/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 0.0051 | 0.0013 | mg/kg | |
| 104-51-8 | n-Butylbenzene | 0.0013 | 0.0051 | 0.00019 | mg/kg | J |
| 135-98-8 | sec-Butylbenzene | 0.0012 | 0.0051 | 0.00024 | mg/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 0.0051 | 0.00091 | mg/kg | |
| 75-15-0 | Carbon disulfide | ND | 0.0051 | 0.00017 | mg/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 0.0021 | 0.00075 | mg/kg | |
| 108-90-7 | Chlorobenzene | ND | 0.0021 | 0.00028 | mg/kg | |
| 75-00-3 | Chloroethane | ND | 0.0051 | 0.0013 | mg/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 0.0051 | 0.0021 | mg/kg | |
| 67-66-3 | Chloroform | ND | 0.0021 | 0.00053 | mg/kg | |
| 74-87-3 | Chloromethane | ND | 0.0051 | 0.00048 | mg/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 0.0051 | 0.0011 | mg/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 0.0051 | 0.00023 | mg/kg | |
| 124-48-1 | Dibromochlorometbane | ND | 0.0021 | 0.00030 | mg/kg | |
| 95-50-I | 1,2-Dichlorobenzene | ND | 0.0021 | 0.00022 | mg/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 0.0021 | 0.00023 | mg/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 0.0021 | 0.0012 | mg/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 0.0021 | 0.00028 | mg/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 0.0021 | 0.00030 | mg/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 0.0021 | 0.00038 | mg/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 0.0021 | 0.00031 | mg/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 0.0021 | 0.00029 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-55-31-DUP | | |
| Lab Sample ID: | MC16961-4 | Date Sampled: | 12/17/12 |
| Matrix: | SO - Soil | Date Received: | 12/18/12 |
| Method: | SW846 8260B | Percent Solids: | 88.5 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 78-87-5 | 1,2-Dichloropropane | ND | 0.0021 | 0.00038 | mg/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 0.0051 | 0.00024 | mg/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 0.0051 | 0.00089 | mg/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 0.0051 | 0.00027 | mg/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.0021 | 0.00018 | mg/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.0021 | 0.00051 | mg/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 0.026 | 0.026 | mg/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 0.0051 | 0.00070 | mg/kg | |
| 100-41-4 | Ethylbenzene | 0.0011 | 0.0021 | 0.00025 | mg/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 0.0051 | 0.00048 | mg/kg | |
| 591-78-6 | 2-Hexanone | ND | 0.0051 | 0.00051 | mg/kg | |
| 98-82-8 | Isopropylbenzene | 0.0011 | 0.0051 | 0.00024 | mg/kg | J |
| 99-87-6 | p-Isopropyltoluene | ND | 0.0051 | 0.00018 | mg/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | 0.0110 | 0.0021 | 0.00030 | mg/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 0.0051 | 0.00051 | mg/kg | |
| 74-95-3 | Methylene bromide | ND | 0.0051 | 0.00051 | mg/kg | |
| 75-09-2 | Methylene chloride | ND | 0.0021 | 0.0012 | mg/kg | |
| 91-20-3 | Naphthalene | ND | 0.0051 | 0.0013 | mg/kg | |
| 103-65-1 | n-Propylbenzene | 0.0011 | 0.0051 | 0.0010 | mg/kg | J |
| 100-42-5 | Styrene | ND | 0.0051 | 0.00024 | mg/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 0.0051 | 0.0010 | mg/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 0.0021 | 0.00044 | mg/kg | |
| 127-18-4 | Tetrachloroethene | ND | 0.0021 | 0.00024 | mg/kg | |
| 108-88-3 | Toluene | 0.0011 | 0.0051 | 0.00087 | mg/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 0.0051 | 0.00024 | mg/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 0.0051 | 0.00024 | mg/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 0.0021 | 0.00032 | mg/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 0.0021 | 0.00076 | mg/kg | |
| 79-01-6 | Trichloroethene | ND | 0.0021 | 0.00022 | mg/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 0.0021 | 0.00031 | mg/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 0.0051 | 0.00030 | mg/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 0.0051 | 0.00023 | mg/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 0.0051 | 0.00022 | mg/kg | |
| 108-05-4 | Vinyl Acetate | ND | 0.0051 | 0.00057 | mg/kg | |
| 75-01-4 | Vinyl chloride | ND | 0.0021 | 0.00028 | mg/kg | |
| | m,p-Xylene | 0.0013 | 0.0021 | 0.00081 | mg/kg | J |
| 95-47-6 | o-Xylene | 0.00072 | 0.0021 | 0.00025 | mg/kg | J |
| 1330-20-7 | Xylene (total) | 0.0020 | 0.0021 | 0.00025 | mg/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates valne exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-55-31-DUP | | |
| Lab Sample ID: | MC16961-4 | Date Sampled: | 12/17/12 |
| Matrix: | SO - Soil | Date Received: | 12/18/12 |
| Method: | SW846 8260B | Percent Solids: | 88.5 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 83% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 92% | | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | mg/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-55-31-DUP | | |
| Lab Sample ID: | MC16961-4 | Date Sampled: | 12/17/12 |
| Matrix: | SO - Soil | Date Received: | 12/18/12 |
| Method: | SW846 8011 SW846 3550B | Percent Solids: | 88.5 |
| Project: | URSMOSTL: Roxana Drilling, Roxana, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BK20294.D | 1 | 12/28/12 | AP | 12/19/12 | OP31493 | GBK733 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 30.5 g | 50.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 0.0028 | 0.0012 | mg/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 0.0028 | 0.0011 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 126% | | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 103% | | 61-167% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES



## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

ACCUTEST LABORATORIES

# CHAIN OF CUSTODY

Accutest Laboratories of New England
495 Technology Center West, Building One
TEL 508-481-6200 FAX 508-481-7753
www.accutest.com

PAGE 1 OF 1

| | |
|---|---|
| FED-EX Tracking # | Bottle Order Control # |
| Accutest Quote # | Accutest Job # MC16961 |

| Client / Reporting Information | Project Information | Requested Analysis ( see TEST CODE sheet) | Matrix Codes |
|---|---|---|---|
| Company Name: URS | Project Name: Roxana drilling | | DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL - Sludge; SED - Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB - Field Blank; EB - Equipment Blank; RB - Rinse Blank; TB - Trip Blank |
| Street Address: | Street: | | |
| City: State: Zip: | City: Roxana, IL | Billing Information ( If different from Report to): Company Name: URS | |
| Project Contact: E. Kunkel; E-mail: | Project #: 21562850.15000 | Street Address: | |
| Phone #: Fax #: | Client PO#: | City: State: Zip: | |
| Sampler(s) Name(s): Wendy Pennington, Jason Staeffer; Phone #: | Project Manager: Dave Palmer | Attention: PO#: | |

| Accutest Lab # | Field ID / Point of Collection | MEOH/DI Vial # | Collection Date | Collection Time | Sampled by | Matrix | # of bottles | HCl | NaOH | HNO3 | H2SO4 | NONE | DI Water | MEOH | ENCORE | Bisulfate | VOC 8260 | VOC 8011 | LAB USE ONLY |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | VMP-55-13 ✓ | | 12/17/12 | 1310 | WP/SS | SO | 4 | | | | | X | | X | | X | X | X | |
| -2 | VMP-55-25 ✓ | | ↓ | 1315 | ↓ | ↓ | 4 | | | | | X | | X | | X | X | X | |
| -3 | VMP-55-31 ✓ | | ↓ | 1320 | ↓ | ↓ | 4 | | | | | X | | X | | X | X | X | |
| -4 | VMP-55-31-Dup ✓ | | ↓ | 1320 | ↓ | ↓ | 4 | | | | | X | | X | | X | X | X | |
| -5 | Trip blank ✓ | | ↓ | | | | 4 | | | | | | | | | | X | X | |
| | | | | | | | | | | | | | | | | | | | 4I2, 11B, 10L4 |

Turnaround Time ( Business days) — Approved By (Accutest PM) / Date

- [x] Std. 10 Business Days
- [ ] Std. 5 Business Days (By Contract only)
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [ ] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" ( Level 2)
- [x] FULLT1 ( Level 3+4 )
- [ ] CT RCP
- [ ] MA MCP
- [ ] NYASP Category A
- [ ] NYASP Category B
- [ ] State Forms
- [x] EDD Format
- [ ] Other

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

Comments / Special Instructions

Sample Custody must be documented below each time samples change possession, including courier delivery

| Relinquished by Sampler | Date Time | Received By | Relinquished By | Date Time | Received By |
|---|---|---|---|---|---|
| 1 [signature] | 12/17/12 1500 | 1 fedex | 2 FX | 12-18-12 1122 | 2 [signature] |
| 3 | | 3 | 4 | | 4 |
| 5 | | 5 | Custody Seal # ☐ Intact ☐ Not intact | Preserved where applicable ☐ | On Ice ☑ Cooler Temp 2.0°C |

5.1

5

**MC16961: Chain of Custody**
**Page 1 of 3**

ACCUTEST LABORATORIES

# Accutest Laboratories Sample Receipt Summary

**Accutest Job Number:** MC16961 **Client:** URS **Immediate Client Services Action Required:** Yes

**Date / Time Received:** 12/18/2012 11:20 **Delivery Method:** FedEx

**Project:** ROXANA DRILLING **No. Coolers:** 1 **Airbill #'s:**

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1 Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2. Custody Seals Intact: | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification: | Infared gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservation | Y | N | N/A |
|---|---|---|---|
| 1. Trip Blank present / cooler: | ☐ | ☑ | |
| 2. Trip Blank listed on COC: | ☑ | ☐ | |
| 3. Samples preserved properly: | ☑ | ☐ | |
| 4. VOCs headspace free: | ☐ | ☐ | ☑ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles: | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree: | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1. Sample rec'd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3. Condition of sample: | Intact |

| Sample Integrity - Instructions | Y | N | N/A |
|---|---|---|---|
| 1. Analysis requested is clear: | ☑ | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | ☑ | |
| 3. Sufficient volume rec'd for analysis: | ☑ | ☐ | |
| 4. Compositing instructions clear: | ☐ | ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ | ☐ | ☑ |

Comments

-5 NO TRIP BLANKS RECEIVED.

Accutest Laboratories
V 508 481 6200

495 Technology Center West, Bldg One
F 508 481.7753

Marlborough, MA
www.accutest.com

5.1

5

**MC16961: Chain of Custody**
**Page 2 of 3**

ACCUTEST

## Sample Receipt Summary - Problem Resolution

**Accutest Job Number:** MC16961

**CSR:** Jeremy Vienneau **Response Date:** 12/19/2012

**Response:** Client was notifed that a trip blank was not received. See email in file.

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Marlborough, MA
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**MC16961: Chain of Custody**
**Page 3 of 3**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC16961

URSMOSTL: Roxana Drilling, Roxana, IL
Project No: 21562850.15000



| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC16961-1 Collected: 17-DEC-12 13:10 By: WPJS Received: 18-DEC-12 By: VMP-55-13 | | | | | | |
| MC16961-1 | SM21 2540 B MOD. | 19-DEC-12 | MA | | | %SOL |
| MC16961-1 | SW846 8260B | 28-DEC-12 17:59 | AMY | | | V8260SL+ |
| MC16961-1 | SW846 8011 | 28-DEC-12 21:32 | AP | 19-DEC-12 | BJ | V8011SL |
| MC16961-2 Collected: 17-DEC-12 13:15 By: WPJS Received: 18-DEC-12 By: VMP-55-25 | | | | | | |
| MC16961-2 | SM21 2540 B MOD. | 19-DEC-12 | MA | | | %SOL |
| MC16961-2 | SW846 8260B | 28-DEC-12 18:30 | AMY | | | V8260SL+ |
| MC16961-2 | SW846 8011 | 28-DEC-12 21:56 | AP | 19-DEC-12 | BJ | V8011SL |
| MC16961-3 Collected: 17-DEC-12 13:20 By: WPJS Received: 18-DEC-12 By: VMP-55-31 | | | | | | |
| MC16961-3 | SM21 2540 B MOD. | 19-DEC-12 | MA | | | %SOL |
| MC16961-3 | SW846 8011 | 28-DEC-12 22:21 | AP | 19-DEC-12 | BJ | V8011SL |
| MC16961-3 | SW846 8260B | 31-DEC-12 14:24 | AMY | | | V8260SL+ |
| MC16961-4 Collected: 17-DEC-12 13:20 By: WPJS Received: 18-DEC-12 By: VMP-55-31-DUP | | | | | | |
| MC16961-4 | SM21 2540 B MOD. | 19-DEC-12 | MA | | | %SOL |
| MC16961-4 | SW846 8260B | 28-DEC-12 19:31 | AMY | | | V8260SL+ |
| MC16961-4 | SW846 8011 | 28-DEC-12 22:45 | AP | 19-DEC-12 | BJ | V8011SL |

# Accutest Internal Chain of Custody



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 12/18/12



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16961-1.1 | Walk In Ref #9 | Mehdi Abdolrahim | 12/19/12 09:04 | Retrieve from Storage |
| MC16961-1.1 | Mehdi Abdolrahim | Walk In Ref #9 | 12/19/12 10:01 | Return to Storage |
| MC16961-1.1 | Walk In Ref #9 | Nick Krasinski | 12/19/12 18:04 | Retrieve from Storage |
| MC16961-1.1 | Nick Krasinski | Walk In Ref #9 | 12/19/12 18:04 | Return to Storage |
| MC16961-1.2 | VOC Ref #10 | Amy Min Yang | 12/28/12 13:19 | Retrieve from Storage |
| MC16961-1.2 | Amy Min Yang | GCMSM | 12/28/12 13:19 | Load on Instrument |
| MC16961-1.4 | VOC Ref #10 | Gary Krasinski | 12/19/12 13:44 | Retrieve from Storage |
| MC16961-1.4 | Gary Krasinski | VOC Ref #10 | 12/20/12 08:22 | Return to Storage |
| MC16961-2.1 | Walk In Ref #9 | Mehdi Abdolrahim | 12/19/12 09:04 | Retrieve from Storage |
| MC16961-2.1 | Mehdi Abdolrahim | Walk In Ref #9 | 12/19/12 10:01 | Return to Storage |
| MC16961-2.1 | Walk In Ref #9 | Nick Krasinski | 12/19/12 18:04 | Retrieve from Storage |
| MC16961-2.1 | Nick Krasinski | Walk In Ref #9 | 12/19/12 18:04 | Return to Storage |
| MC16961-2.2 | VOC Ref #10 | Amy Min Yang | 12/28/12 13:19 | Retrieve from Storage |
| MC16961-2.2 | Amy Min Yang | GCMSM | 12/28/12 13:19 | Load on Instrument |
| MC16961-2.4 | VOC Ref #10 | Gary Krasinski | 12/19/12 13:44 | Retrieve from Storage |
| MC16961-2.4 | Gary Krasinski | VOC Ref #10 | 12/20/12 08:22 | Retnrn to Storage |
| MC16961-3.1 | Walk In Ref #9 | Mehdi Abdolrahim | 12/19/12 09:04 | Retrieve from Storage |
| MC16961-3.1 | Mehdi Abdolrahim | Walk In Ref #9 | 12/19/12 10:01 | Return to Storage |
| MC16961-3.1 | Walk In Ref #9 | Nick Krasinski | 12/19/12 18:04 | Retrieve from Storage |
| MC16961-3.1 | Nick Krasinski | Walk In Ref #9 | 12/19/12 18:04 | Return to Storage |
| MC16961-3.2 | VOC Ref #10 | Amy Min Yang | 12/28/12 13:19 | Retrieve from Storage |
| MC16961-3.2 | Amy Min Yang | GCMSM | 12/28/12 13:19 | Load on Instrument |
| MC16961-3.3 | VOC Ref #10 | Amy Min Yang | 12/31/12 12:36 | Retrieve from Storage |
| MC16961-3.3 | Amy Min Yang | GCMSM | 12/31/12 12:36 | Load on Instrument |
| MC16961-3.4 | VOC Ref #10 | Gary Krasinski | 12/19/12 13:44 | Retrieve from Storage |
| MC16961-3.4 | Gary Krasinski | VOC Ref #10 | 12/20/12 08:22 | Return to Storage |
| MC16961-4.1 | Walk In Ref #9 | Mehdi Abdolrahim | 12/19/12 09:04 | Retrieve from Storage |
| MC16961-4.1 | Mehdi Abdolrahim | Walk In Ref #9 | 12/19/12 10:01 | Return to Storage |
| MC16961-4.1 | Walk In Ref #9 | Nick Krasinski | 12/19/12 18:04 | Retrieve from Storage |
| MC16961-4.1 | Nick Krasinski | Walk In Ref #9 | 12/19/12 18:04 | Return to Storage |
| MC16961-4.2 | VOC Ref #10 | Amy Min Yang | 12/28/12 13:19 | Retrieve from Storage |
| MC16961-4.2 | Amy Min Yang | GCMSM | 12/28/12 13:19 | Load on Instrnment |

# Accutest Internal Chain of Custody



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL
Received: 12/18/12

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC16961-4.4 | VOC Ref #10 | Gary Krasinski | 12/19/12 13:44 | Retrieve from Storage |
| MC16961-4.4 | Gary Krasinski | VOC Ref #10 | 12/20/12 08:22 | Return to Storage |

New England ACCUTEST LABORATORIES

## GC/MS Volatiles

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## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1806-MB | M53166.D | 1 | 12/28/12 | AMY | n/a | n/a | MSM1806 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16961-1, MC16961-2, MC16961-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 25 | 1.3 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.29 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.37 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 2.0 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.52 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.88 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.16 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.73 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.28 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 1.3 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 2.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.52 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.46 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.23 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.30 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.22 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.23 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.21 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.27 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.29 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.37 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.37 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.23 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.87 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.26 | ug/kg | |

# Method Blank Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1806-MB | M53166.D | 1 | 12/28/12 | AMY | n/a | n/a | MSM1806 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16961-1, MC16961-2, MC16961-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 0.17 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.50 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.68 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.24 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 0.46 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 0.50 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.29 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.50 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.49 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 1.2 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 1.3 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 1.0 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.23 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.43 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.23 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.85 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 0.24 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 0.23 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.31 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.73 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.30 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.29 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.22 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.21 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 0.56 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.27 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.79 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.24 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.24 | ug/kg | |

# Method Blank Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1806-MB | M53166.D | 1 | 12/28/12 | AMY | n/a | n/a | MSM1806 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16961-1, MC16961-2, MC16961-4

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 79% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/kg | |

# Method Blank Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1807-MB | M53193.D | 1 | 12/31/12 | AMY | n/a | n/a | MSM1807 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16961-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 10 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 25 | 1.3 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.29 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.37 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 2.0 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.52 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.88 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.16 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.73 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.28 | ug/kg | |
| 75-00-3 | Chloroetbaue | ND | 5.0 | 1.3 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 2.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.52 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.46 | ug/kg | |
| 95-49-8 | o-Chlorotolueue | ND | 5.0 | 1.1 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.23 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.30 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.22 | ug/kg | |
| 541-73-1 | 1,3-Dichloroheuzene | ND | 2.0 | 0.23 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.21 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.27 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.29 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.37 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.37 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropaue | ND | 5.0 | 0.23 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.87 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.26 | ug/kg | |

# Method Blank Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1807-MB | M53193.D | 1 | 12/31/12 | AMY | n/a | n/a | MSM1807 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16961-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 0.17 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.50 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.68 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.24 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 0.46 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 0.50 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.29 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.50 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.49 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 1.2 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 1.3 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 1.0 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.23 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.43 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.23 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.85 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 0.24 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 0.23 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.31 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.73 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.30 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.29 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.22 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.21 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 0.56 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.27 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.79 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.24 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.24 | ug/kg | |

# Method Blank Summary

Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSMI807-MB | M53193.D | 1 | 12/31/12 | AMY | n/a | n/a | MSM1807 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16961-3

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 83% | 70-130% |
| 2037-26-5 | Toluene-D8 | 89% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 79% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/kg | |

6.1.2

# Blank Spike Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1806-BS | M53164.D | 1 | 12/28/12 | AMY | n/a | n/a | MSM1806 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16961-1, MC16961-2, MC16961-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 31.9 | 64* a | 70-130 |
| 107-02-8 | Acrolein | 250 | 214 | 86 | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 47.0 | 94 | 70-130 |
| 71-43-2 | Benzene | 50 | 49.5 | 99 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 47.2 | 94 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 46.9 | 94 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 48.0 | 96 | 70-130 |
| 75-25-2 | Bromoform | 50 | 46.7 | 93 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 56.5 | 113 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 53.1 | 106 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 53.9 | 108 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 50.9 | 102 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 49.1 | 98 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 61.5 | 123 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 57.5 | 115 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 46.8 | 94 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 58.2 | 116 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 48.8 | 98 | 10-160 |
| 67-66-3 | Chloroform | 50 | 48.5 | 97 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 66.0 | 132* a | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 45.9 | 92 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 47.9 | 96 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 46.2 | 92 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 44.3 | 89 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 46.3 | 93 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 47.3 | 95 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 79.9 | 160* a | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 50.1 | 100 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 47.2 | 94 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 59.9 | 120 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 47.8 | 96 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 53.5 | 107 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 45.6 | 91 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 45.2 | 90 | 70-130 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 55.3 | 111 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 56.7 | 113 | 70-130 |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1806-BS | M53164.D | 1 | 12/28/12 | AMY | n/a | n/a | MSM1806 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16961-1, MC16961-2, MC16961-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 45.4 | 91 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 48.6 | 97 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 282 | 113 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 50.3 | 101 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 51.6 | 103 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 56.1 | 112 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 56.0 | 112 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 48.8 | 98 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 55.6 | 111 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 42.9 | 86 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 51.1 | 102 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 46.8 | 94 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 44.6 | 89 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 56.7 | 113 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 49.1 | 98 | 70-130 |
| 100-42-5 | Styrene | 50 | 48.3 | 97 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 47.3 | 95 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 46.9 | 94 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 57.2 | 114 | 70-130 |
| 108-88-3 | Toluene | 50 | 52.9 | 106 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 49.7 | 99 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 50.7 | 101 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 54.2 | 108 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 45.5 | 91 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 53.3 | 107 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 63.9 | 128 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 48.7 | 97 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 49.9 | 100 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 50.4 | 101 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 50.2 | 100 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 59.7 | 119 | 70-130 |
| | m,p-Xylene | 100 | 102 | 102 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 48.5 | 97 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 151 | 101 | 70-130 |

* = Outside of Control Limits.

# Blank Spike Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1806-BS | M53164.D | 1 | 12/28/12 | AMY | n/a | n/a | MSM1806 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16961-1, MC16961-2, MC16961-4

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 84% | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 80% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1807-BS | M53190.D | 1 | 12/31/12 | AMY | n/a | n/a | MSM1807 |
| MSM1807-BSD | M53191.D | 1 | 12/31/12 | AMY | n/a | n/a | MSM1807 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16961-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 33.2 | 66* a | 36.5 | 73 | 9 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 184 | 74 | 186 | 74 | 1 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 43.5 | 87 | 48.5 | 97 | 11 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 44.5 | 89 | 50.3 | 101 | 12 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 42.1 | 84 | 46.0 | 92 | 9 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 44.0 | 88 | 47.5 | 95 | 8 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 43.1 | 86 | 47.9 | 96 | 11 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 42.3 | 85 | 46.2 | 92 | 9 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 52.2 | 104 | 57.0 | 114 | 9 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 40.3 | 81 | 46.3 | 93 | 14 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 47.2 | 94 | 53.8 | 108 | 13 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 44.9 | 90 | 51.6 | 103 | 14 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 43.8 | 88 | 50.1 | 100 | 13 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 55.4 | 111 | 61.8 | 124 | 11 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 50.9 | 102 | 58.3 | 117 | 14 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 41.8 | 84 | 46.9 | 94 | 11 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 52.7 | 105 | 59.1 | 118 | 11 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 46.2 | 92 | 50.1 | 100 | 8 | 10-160/25 |
| 67-66-3 | Chloroform | 50 | 45.3 | 91 | 49.5 | 99 | 9 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 59.9 | 120 | 66.2 | 132* a | 10 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 41.5 | 83 | 46.3 | 93 | 11 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 42.4 | 85 | 47.2 | 94 | 11 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 42.0 | 84 | 45.5 | 91 | 8 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 40.7 | 81 | 44.2 | 88 | 8 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 42.0 | 84 | 45.8 | 92 | 9 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 42.1 | 84 | 45.9 | 92 | 9 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 67.4 | 135* a | 77.2 | 154* a | 14 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 46.5 | 93 | 51.9 | 104 | 11 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 42.4 | 85 | 46.5 | 93 | 9 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 53.9 | 108 | 61.1 | 122 | 13 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 44.7 | 89 | 48.0 | 96 | 7 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 48.8 | 98 | 54.4 | 109 | 11 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 40.7 | 81 | 46.1 | 92 | 12 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 41.3 | 83 | 45.0 | 90 | 9 | 70-130/25 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 50.5 | 101 | 56.8 | 114 | 12 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 49.6 | 99 | 57.4 | 115 | 15 | 70-130/25 |

* = Outside of Control Limits.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1807-BS | M53190.D | 1 | 12/31/12 | AMY | n/a | n/a | MSM1807 |
| MSM1807-BSD | M53191.D | 1 | 12/31/12 | AMY | n/a | n/a | MSM1807 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16961-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 41.3 | 83 | 45.6 | 91 | 10 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 43.9 | 88 | 47.7 | 95 | 8 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 224 | 90 | 247 | 99 | 10 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 46.9 | 94 | 50.7 | 101 | 8 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 50 | 45.8 | 92 | 51.6 | 103 | 12 | 70-130/25 |
| 87-68-3 | Hexachlorobntadiene | 50 | 48.6 | 97 | 55.1 | 110 | 13 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 51.1 | 102 | 57.1 | 114 | 11 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 43.6 | 87 | 49.7 | 99 | 13 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 48.2 | 96 | 55.7 | 111 | 14 | 70-130/25 |
| 1634-04-4 | Methyl Tert Bntyl Ether | 50 | 42.5 | 85 | 45.1 | 90 | 6 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 47.2 | 94 | 52.9 | 106 | 11 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 42.6 | 85 | 46.7 | 93 | 9 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 40.5 | 81 | 45.0 | 90 | 11 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 51.8 | 104 | 53.0 | 106 | 2 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 44.3 | 89 | 49.8 | 100 | 12 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 43.0 | 86 | 47.5 | 95 | 10 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 42.3 | 85 | 47.7 | 95 | 12 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 42.0 | 84 | 45.9 | 92 | 9 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 49.8 | 100 | 57.2 | 114 | 14 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 47.1 | 94 | 53.5 | 107 | 13 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 44.8 | 90 | 47.0 | 94 | 5 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 44.2 | 88 | 47.4 | 95 | 7 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 50.1 | 100 | 56.6 | 113 | 12 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 41.2 | 82 | 46.0 | 92 | 11 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 47.7 | 95 | 54.3 | 109 | 13 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 58.5 | 117 | 65.9 | 132* a | 12 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 43.9 | 88 | 48.8 | 98 | 11 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 44.2 | 88 | 49.5 | 99 | 11 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 44.7 | 89 | 50.5 | 101 | 12 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 43.6 | 87 | 43.5 | 87 | 0 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 55.8 | 112 | 62.3 | 125 | 11 | 70-130/25 |
| | m,p-Xylene | 100 | 91.2 | 91 | 102 | 102 | 11 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 43.5 | 87 | 48.6 | 97 | 11 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 135 | 90 | 151 | 101 | 11 | 70-130/25 |

* = Outside of Control Limits.

6.3.1

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1807-BS | M53190.D | 1 | 12/31/12 | AMY | n/a | n/a | MSM1807 |
| MSM1807-BSD | M53191.D | 1 | 12/31/12 | AMY | n/a | n/a | MSM1807 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16961-3

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 87% | 86% | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | 88% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 81% | 82% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16999-1MS | M53173.D | 1 | 12/28/12 | AMY | n/a | n/a | MSM1806 |
| MC16999-1MSD | M53174.D | 1 | 12/28/12 | AMY | n/a | n/a | MSM1806 |
| MC16999-1 | M53169.D | 1 | 12/28/12 | AMY | n/a | n/a | MSM1806 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16961-1, MC16961-2, MC16961-4

| CAS No. | Compound | MC16999-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 81 | 67.0 | 83 | 71.5 | 85 | 6 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 405 | 369 | 91 | 331 | 79 | 11 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 81 | 74.6 | 92 | 76.6 | 91 | 3 | 70-130/30 |
| 71-43-2 | Benzene | 0.49 | J | 81 | 75.1 | 92 | 81.2 | 96 | 8 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 81 | 67.3 | 83 | 71.0 | 85 | 5 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 81 | 74.0 | 91 | 78.2 | 93 | 6 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 81 | 73.6 | 91 | 77.7 | 93 | 5 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 81 | 70.6 | 87 | 71.4 | 85 | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 81 | 87.3 | 108 | 92.5 | 110 | 6 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 81 | 57.3 | 71 | 81.6 | 97 | 35* [a] | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 81 | 61.9 | 76 | 82.6 | 99 | 29 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 81 | 60.2 | 74 | 79.1 | 94 | 27 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 81 | 60.4 | 75 | 77.3 | 92 | 25 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 81 | 93.6 | 116 | 101 | 121 | 8 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 81 | 84.1 | 104 | 93.2 | 111 | 10 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 81 | 67.5 | 83 | 73.3 | 88 | 8 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 81 | 89.2 | 110 | 96.8 | 116 | 8 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 81 | 63.0 | 78 | 70.8 | 85 | 12 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 81 | 75.3 | 93 | 80.7 | 96 | 7 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 81 | 101 | 125 | 112 | 134* [b] | 10 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 81 | 62.0 | 77 | 71.2 | 85 | 14 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 81 | 64.0 | 79 | 73.0 | 87 | 13 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 81 | 71.0 | 88 | 73.9 | 88 | 4 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 81 | 57.4 | 71 | 64.0 | 76 | 11 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 81 | 60.0 | 74 | 69.0 | 82 | 14 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 81 | 61.8 | 76 | 70.0 | 84 | 12 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 81 | 121 | 149* [b] | 132 | 158* [b] | 9 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 81 | 78.3 | 97 | 84.2 | 101 | 7 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 81 | 72.9 | 90 | 76.1 | 91 | 4 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 81 | 91.5 | 113 | 99.3 | 119 | 8 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 81 | 73.7 | 91 | 78.8 | 94 | 7 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 81 | 81.0 | 100 | 88.4 | 106 | 9 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 81 | 70.4 | 87 | 73.9 | 88 | 5 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 81 | 69.5 | 86 | 72.8 | 87 | 5 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 81 | 83.8 | 103 | 91.7 | 109 | 9 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 81 | 83.7 | 103 | 92.8 | 111 | 10 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16999-1MS | M53173.D | 1 | 12/28/12 | AMY | n/a | n/a | MSM1806 |
| MC16999-1MSD | M53174.D | 1 | 12/28/12 | AMY | n/a | n/a | MSM1806 |
| MC16999-1 | M53169.D | 1 | 12/28/12 | AMY | n/a | n/a | MSM1806 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC16961-1, MC16961-2, MC16961-4

| CAS No. | Compound | MC16999-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 81 | 69.4 | 86 | 73.5 | 88 | 6 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 81 | 76.0 | 94 | 78.3 | 93 | 3 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 405 | 410 | 101 | 409 | 98 | 0 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 81 | 75.8 | 94 | 76.4 | 91 | 1 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 81 | 72.7 | 90 | 82.8 | 99 | 13 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 81 | 56.7 | 70 | 83.0 | 99 | 38* [a] | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 81 | 84.2 | 104 | 79.1 | 94 | 6 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 81 | 65.4 | 81 | 78.1 | 93 | 18 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 81 | 65.3 | 81 | 86.1 | 103 | 27 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 81 | 69.7 | 86 | 75.1 | 90 | 7 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 81 | 81.5 | 101 | 82.4 | 98 | 1 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 81 | 74.8 | 92 | 76.5 | 91 | 2 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 81 | 69.8 | 86 | 74.3 | 89 | 6 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 81 | 52.7 | 65* [b] | 59.5 | 71 | 12 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 81 | 63.8 | 79 | 77.7 | 93 | 20 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 81 | 66.8 | 82 | 72.1 | 86 | 8 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 81 | 70.5 | 87 | 75.9 | 91 | 7 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 81 | 73.0 | 90 | 72.2 | 86 | 1 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 81 | 80.1 | 99 | 92.1 | 110 | 14 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 81 | 78.4 | 97 | 84.5 | 101 | 7 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 81 | 47.4 | 59* [b] | 60.5 | 72 | 24 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 81 | 51.9 | 64* [b] | 66.5 | 79 | 25 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 81 | 82.5 | 102 | 89.9 | 107 | 9 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 81 | 71.5 | 88 | 73.5 | 88 | 3 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 81 | 79.5 | 98 | 87.1 | 104 | 9 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 81 | 96.6 | 119 | 107 | 128 | 10 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 81 | 75.8 | 94 | 74.1 | 88 | 2 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 81 | 63.5 | 78 | 77.5 | 93 | 20 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 81 | 63.5 | 78 | 78.2 | 93 | 21 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 81 | 89.0 | 110 | 84.7 | 101 | 5 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 81 | 91.3 | 113 | 101 | 121 | 10 | 70-130/30 |
| | m,p-Xylene | ND | | 162 | 142 | 88 | 163 | 97 | 14 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 81 | 67.9 | 84 | 76.9 | 92 | 12 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 243 | 210 | 86 | 240 | 96 | 13 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC16999-1MS | M53173.D | 1 | 12/28/12 | AMY | n/a | n/a | MSM1806 |
| MC16999-1MSD | M53174.D | 1 | 12/28/12 | AMY | n/a | n/a | MSM1806 |
| MC16999-1 | M53169.D | 1 | 12/28/12 | AMY | n/a | n/a | MSM1806 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16961-1, MC16961-2, MC16961-4

| CAS No. | Surrogate Recoveries | MS | MSD | MC16999-1 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 86% | 86% | 88% | 70-130% |
| 2037-26-5 | Toluene-D8 | 89% | 89% | 88% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 83% | 81% | 82% | 70-130% |

(a) High RPD due to possible matrix interference and/or sample non-homogeneity.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC17066-2AMS | M53205.D | 1 | 12/31/12 | AMY | n/a | n/a | MSM1807 |
| MC17066-2AMSD | M53206.D | 1 | 12/31/12 | AMY | n/a | n/a | MSM1807 |
| MC17066-2A | M53204.D | 1 | 12/31/12 | AMY | n/a | n/a | MSM1807 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16961-3

| CAS No. | Compound | MC17066-2A ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 74.4 | 198 | 266* a | 209 | 277* a | 5 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 372 | 256 | 69* a | 230 | 61* a | 11 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 74.4 | 57.0 | 77 | 67.1 | 89 | 16 | 70-130/30 |
| 71-43-2 | Benzene | 1.7 | | 74.4 | 60.8 | 79 | 62.7 | 81 | 3 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 74.4 | 39.0 | 52* a | 33.8 | 45* a | 14 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 74.4 | 60.4 | 81 | 62.4 | 83 | 3 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 74.4 | 55.9 | 75 | 55.3 | 73 | 1 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 74.4 | 39.0 | 52* a | 36.6 | 48* a | 6 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 74.4 | 73.7 | 99 | 74.3 | 98 | 1 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 74.4 | 62.7 | 84 | 70.8 | 94 | 12 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 74.4 | 48.1 | 65* a | 44.3 | 59* a | 8 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 74.4 | 52.0 | 70 | 49.8 | 66* a | 4 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 74.4 | 52.0 | 70 | 51.0 | 68* a | 2 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 74.4 | 65.7 | 88 | 72.3 | 96 | 10 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 74.4 | 63.7 | 86 | 66.9 | 89 | 5 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 74.4 | 45.1 | 61* a | 43.1 | 57* a | 5 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 74.4 | 67.1 | 90 | 72.8 | 96 | 8 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 74.4 | ND | 0* a | ND | 0* a | nc | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 74.4 | 59.7 | 80 | 62.6 | 83 | 5 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 74.4 | 92.1 | 124 | 99.3 | 132* a | 8 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 74.4 | 41.9 | 56* a | 38.5 | 51* a | 8 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 74.4 | 40.5 | 54* a | 35.8 | 47* a | 12 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 74.4 | 48.9 | 66* a | 46.7 | 62* a | 5 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 74.4 | 26.2 | 35* a | 21.1 | 28* a | 22 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 74.4 | 31.7 | 43* a | 27.0 | 36* a | 16 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 74.4 | 31.1 | 42* a | 26.1 | 35* a | 17 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 74.4 | 98.8 | 133* a | 110 | 146* a | 11 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 74.4 | 61.3 | 82 | 65.0 | 86 | 6 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 74.4 | 60.3 | 81 | 59.9 | 79 | 1 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 74.4 | 64.6 | 87 | 70.7 | 94 | 9 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 74.4 | 57.5 | 77 | 59.9 | 79 | 4 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 74.4 | 61.6 | 83 | 65.2 | 86 | 6 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 74.4 | 55.9 | 75 | 56.8 | 75 | 2 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 74.4 | 52.0 | 70 | 52.1 | 69* a | 0 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 74.4 | 64.1 | 86 | 69.4 | 92 | 8 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 74.4 | 64.9 | 87 | 68.1 | 90 | 5 | 70-130/30 |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC17066-2AMS | M53205.D | 1 | 12/31/12 | AMY | n/a | n/a | MSM1807 |
| MC17066-2AMSD | M53206.D | 1 | 12/31/12 | AMY | n/a | n/a | MSM1807 |
| MC17066-2A | M53204.D | 1 | 12/31/12 | AMY | n/a | n/a | MSM1807 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16961-3

| CAS No. | Compound | MC17066-2A ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 74.4 | 52.5 | 71 | 51.0 | 68* [a] | 3 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 74.4 | 53.1 | 71 | 50.3 | 67* [a] | 5 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 372 | 390 | 105 | 422 | 112 | 8 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 74.4 | 60.8 | 82 | 56.5 | 75 | 7 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 1.1 | J | 74.4 | 54.0 | 71 | 53.8 | 70 | 0 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 74.4 | 50.3 | 68* [a] | 48.7 | 65* [a] | 3 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 74.4 | 51.5 | 69* [a] | 64.9 | 86 | 23 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 74.4 | 52.7 | 71 | 51.2 | 68* [a] | 3 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 74.4 | 54.1 | 73 | 50.3 | 67* [a] | 7 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 74.4 | 64.7 | 87 | 68.3 | 90 | 5 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 74.4 | 69.7 | 94 | 68.0 | 90 | 2 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 74.4 | 58.0 | 78 | 57.9 | 77 | 0 | 70-130/30 |
| 75-09-2 | Methylene chloride | 1.9 | J | 74.4 | 56.1 | 73 | 58.9 | 75 | 5 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 74.4 | 13.9 | 19* [a] | 12.4 | 16* [a] | 11 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 74.4 | 50.0 | 67* [a] | 47.5 | 63* [a] | 5 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 74.4 | 39.6 | 53* [a] | 35.8 | 47* [a] | 10 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 74.4 | 48.0 | 64* [a] | 48.4 | 64* [a] | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 74.4 | 39.6 | 53* [a] | 35.9 | 48* [a] | 10 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 74.4 | 61.6 | 83 | 64.2 | 85 | 4 | 70-130/30 |
| 108-88-3 | Toluene | 3.2 | J | 74.4 | 62.5 | 80 | 63.1 | 79 | 1 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 74.4 | 15.8 | 21* [a] | 12.6 | 17* [a] | 23 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 74.4 | 19.9 | 27* [a] | 15.6 | 21* [a] | 24 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 74.4 | 62.0 | 83 | 66.9 | 89 | 8 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 74.4 | 52.2 | 70 | 49.9 | 66* [a] | 5 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 74.4 | 60.9 | 82 | 62.0 | 82 | 2 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 74.4 | 73.2 | 98 | 81.0 | 107 | 10 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 74.4 | 42.6 | 57* [a] | 37.6 | 50* [a] | 12 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.0 | J | 74.4 | 45.3 | 60* [a] | 41.3 | 53* [a] | 9 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 74.4 | 48.3 | 65* [a] | 45.4 | 60* [a] | 6 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 74.4 | 73.0 | 98 | 73.8 | 98 | 1 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 74.4 | 77.4 | 104 | 85.3 | 113 | 10 | 70-130/30 |
| | m,p-Xylene | 1.5 | J | 149 | 104 | 69* [a] | 103 | 67* [a] | 1 | 70-130/30 |
| 95-47-6 | o-Xylene | 0.59 | J | 74.4 | 47.0 | 62* [a] | 47.0 | 61* [a] | 0 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 2.1 | J | 223 | 151 | 67* [a] | 150 | 65* [a] | 1 | 70-130/30 |

* = Outside of Control Limits.

6.4.2

6

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC17066-2AMS | M53205.D | 1 | 12/31/12 | AMY | n/a | n/a | MSM1807 |
| MC17066-2AMSD | M53206.D | 1 | 12/31/12 | AMY | n/a | n/a | MSM1807 |
| MC17066-2A | M53204.D | 1 | 12/31/12 | AMY | n/a | n/a | MSM1807 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC16961-3

| CAS No. | Surrogate Recoveries | MS | MSD | MC17066-2A | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | 83% | 83% | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | 88% | 88% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 86% | 86% | 98% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

* = Outside of Control Limits.

# Volatile Internal Standard Area Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1806-CC1800 | Injection Date: | 12/28/12 |
| Lab File ID: | M53163.D | Injection Time: | 11:22 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 173299 | 9.36 | 235211 | 10.24 | 117006 | 13.52 | 132416 | 16.08 | 39437 | 6.87 |
| Upper Limit [a] | 346598 | 9.86 | 470422 | 10.74 | 234012 | 14.02 | 264832 | 16.58 | 78874 | 7.37 |
| Lower Limit [b] | 86650 | 8.86 | 117606 | 9.74 | 58503 | 13.02 | 66208 | 15.58 | 19719 | 6.37 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1806-BS | 163710 | 9.36 | 224497 | 10.24 | 112617 | 13.52 | 132252 | 16.08 | 81702[c] | 6.86 |
| MSM1805-BS1 | 163710 | 9.36 | 224497 | 10.24 | 112617 | 13.52 | 132252 | 16.08 | 81702[c] | 6.86 |
| MSM1805-MB1 | 172436 | 9.36 | 232442 | 10.24 | 111084 | 13.52 | 135750 | 16.08 | 35961 | 6.86 |
| MSM1806-MB | 172436 | 9.36 | 232442 | 10.24 | 111084 | 13.52 | 135750 | 16.08 | 35961 | 6.86 |
| MC17156-6MSD | 168026 | 9.36 | 228465 | 10.24 | 115455 | 13.52 | 132327 | 16.08 | 83142[c] | 6.85 |
| MC16999-1 | 167958 | 9.36 | 231649 | 10.24 | 113379 | 13.52 | 135295 | 16.08 | 57519 | 6.86 |
| ZZZZZZ | 173461 | 9.36 | 240025 | 10.24 | 117213 | 13.52 | 136771 | 16.08 | 63208 | 6.86 |
| ZZZZZZ | 173436 | 9.36 | 237714 | 10.24 | 114587 | 13.52 | 137263 | 16.08 | 69045 | 6.86 |
| ZZZZZZ | 176636 | 9.36 | 237205 | 10.24 | 116669 | 13.52 | 133355 | 16.08 | 56739 | 6.86 |
| MC16999-1MS | 170605 | 9.36 | 236104 | 10.24 | 118568 | 13.52 | 136432 | 16.08 | 82307[c] | 6.86 |
| MC16999-1MSD | 169923 | 9.36 | 236090 | 10.24 | 118380 | 13.52 | 138227 | 16.08 | 84603[c] | 6.85 |
| MC16961-1 | 173399 | 9.36 | 240001 | 10.24 | 117301 | 13.52 | 143276 | 16.08 | 81175[c] | 6.86 |
| MC16961-2 | 176917 | 9.36 | 241780 | 10.24 | 119429 | 13.52 | 144025 | 16.08 | 72631 | 6.86 |
| MC16961-4 | 178397 | 9.36 | 244621 | 10.24 | 120908 | 13.52 | 143132 | 16.08 | 67801 | 6.86 |
| ZZZZZZ | 177909 | 9.36 | 241965 | 10.24 | 116211 | 13.52 | 139479 | 16.08 | 40154 | 6.86 |
| ZZZZZZ | 180126 | 9.36 | 242757 | 10.24 | 117501 | 13.52 | 141621 | 16.08 | 37284 | 6.86 |
| ZZZZZZ | 179902 | 9.36 | 246525 | 10.24 | 119062 | 13.52 | 142481 | 16.08 | 39089 | 6.86 |
| ZZZZZZ | 178502 | 9.36 | 242991 | 10.24 | 118836 | 13.52 | 141267 | 16.08 | 41213 | 6.86 |
| ZZZZZZ | 172725 | 9.36 | 236177 | 10.24 | 112464 | 13.52 | 133633 | 16.08 | 38616 | 6.86 |
| ZZZZZZ | 172828 | 9.36 | 234544 | 10.24 | 113041 | 13.52 | 133102 | 16.08 | 40116 | 6.86 |
| ZZZZZZ | 163814 | 9.36 | 223200 | 10.24 | 109309 | 13.52 | 134368 | 16.08 | 79213[c] | 6.86 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits. Target analytes not associated with this internal standard.

# Volatile Internal Standard Area Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1807-CC1800 | Injection Date: | 12/31/12 |
| Lab File ID: | M53189.D | Injection Time: | 09:51 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 186689 | 9.35 | 264688 | 10.24 | 132201 | 13.52 | 147574 | 16.08 | 47637 | 6.86 |
| Upper Limit [a] | 373378 | 9.85 | 529376 | 10.74 | 264402 | 14.02 | 295148 | 16.58 | 95274 | 7.36 |
| Lower Limit [b] | 93345 | 8.85 | 132344 | 9.74 | 66101 | 13.02 | 73787 | 15.58 | 23819 | 6.36 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1807-BS | 171041 | 9.36 | 242741 | 10.24 | 122649 | 13.52 | 144482 | 16.08 | 88347 | 6.86 |
| MSM1807-BSD | 168760 | 9.36 | 234211 | 10.24 | 118794 | 13.52 | 138826 | 16.08 | 86125 | 6.86 |
| MSM1807-MB | 168988 | 9.36 | 231354 | 10.24 | 112452 | 13.52 | 135443 | 16.08 | 41445 | 6.86 |
| ZZZZZZ | 138337 | 9.36 | 187555 | 10.24 | 89829 | 13.52 | 92550 | 16.08 | 51996 | 6.85 |
| ZZZZZZ | 122341 | 9.36 | 169022 | 10.24 | 74020 | 13.52 | 59363[c] | 16.08 | 59071 | 6.86 |
| ZZZZZZ | 140719 | 9.36 | 191334 | 10.24 | 91758 | 13.52 | 96687 | 16.08 | 50838 | 6.86 |
| ZZZZZZ | 143805 | 9.36 | 192668 | 10.24 | 82165 | 13.52 | 58672[c] | 16.08 | 58572 | 6.85 |
| MC16961-3 | 166789 | 9.35 | 226381 | 10.24 | 111670 | 13.52 | 135654 | 16.08 | 66371 | 6.85 |
| ZZZZZZ | 167524 | 9.36 | 228779 | 10.24 | 110220 | 13.52 | 136767 | 16.08 | 76865 | 6.85 |
| ZZZZZZ | 173949 | 9.36 | 237012 | 10.24 | 116408 | 13.52 | 141838 | 16.08 | 70574 | 6.86 |
| ZZZZZZ | 173489 | 9.36 | 240185 | 10.24 | 118758 | 13.52 | 145056 | 16.08 | 71397 | 6.86 |
| ZZZZZZ | 168278 | 9.36 | 233486 | 10.24 | 115139 | 13.52 | 141574 | 16.08 | 70628 | 6.86 |
| ZZZZZZ | 151879 | 9.36 | 208490 | 10.24 | 95964 | 13.52 | 80892 | 16.08 | 72562 | 6.86 |
| MC17066-2A | 144615 | 9.36 | 197295 | 10.24 | 92292 | 13.52 | 82689 | 16.08 | 70786 | 6.85 |
| MC17066-2AMS | 158300 | 9.36 | 216496 | 10.24 | 107517 | 13.52 | 114343 | 16.08 | 74815 | 6.85 |
| MC17066-2AMSD | 147693 | 9.35 | 203662 | 10.24 | 99097 | 13.52 | 108944 | 16.08 | 73075 | 6.85 |
| ZZZZZZ | 128350 | 9.36 | 174471 | 10.24 | 69663 | 13.52 | 42050[c] | 16.09 | 62995 | 6.85 |
| ZZZZZZ | 148557 | 9.36 | 200729 | 10.24 | 81101 | 13.52 | 53565[c] | 16.08 | 71209 | 6.86 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Volatile Surrogate Recovery Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC16961-1 | M53176.D | 86.0 | 88.0 | 81.0 |
| MC16961-2 | M53177.D | 85.0 | 88.0 | 83.0 |
| MC16961-3 | M53198.D | 85.0 | 88.0 | 80.0 |
| MC16961-4 | M53179.D | 83.0 | 88.0 | 92.0 |
| MC16999-1MS | M53173.D | 86.0 | 89.0 | 83.0 |
| MC16999-1MSD | M53174.D | 86.0 | 89.0 | 81.0 |
| MC17066-2AMS | M53205.D | 82.0 | 88.0 | 86.0 |
| MC17066-2AMSD | M53206.D | 83.0 | 88.0 | 86.0 |
| MSM1806-BS | M53164.D | 84.0 | 88.0 | 80.0 |
| MSM1806-MB | M53166.D | 82.0 | 88.0 | 79.0 |
| MSM1807-BS | M53190.D | 87.0 | 88.0 | 81.0 |
| MSM1807-BSD | M53191.D | 86.0 | 88.0 | 82.0 |
| MSM1807-MB | M53193.D | 83.0 | 89.0 | 79.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromoflnorobenzene | 70-130% |

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## GC Volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31493-MB | BK20274.D | 1 | 12/28/12 | AP | 12/19/12 | OP31493 | GBK733 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16961-1, MC16961-2, MC16961-3, MC16961-4



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 2.5 | 1.1 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.5 | 0.96 | ug/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 126% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 96% | 61-167% |

# Blank Spike Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31493-BS | BK20275.D | 1 | 12/28/12 | AP | 12/19/12 | OP31493 | GBK733 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16961-1, MC16961-2, MC16961-3, MC16961-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 32.6 | 35.8 | 110 | 59-142 |
| 106-93-4 | 1,2-Dibromoethane | 32.6 | 37.6 | 115 | 56-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 114% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 85% | 61-167% |

* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP31493-MS | BK20289.D | 1 | 12/28/12 | AP | 12/19/12 | OP31493 | GBK733 |
| OP31493-MSD | BK20290.D | 1 | 12/28/12 | AP | 12/19/12 | OP31493 | GBK733 |
| MC16961-2 | BK20292.D | 1 | 12/28/12 | AP | 12/19/12 | OP31493 | GBK733 |

The QC reported here applies to the following samples: Method: SW846 8011

MC16961-1, MC16961-2, MC16961-3, MC16961-4



| CAS No. | Compound | MC16961-2 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 67.7 | 77.2 | 114 | 79.9 | 116 | 3 | 40-156/27 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 67.7 | 85.7 | 127 | 88.0 | 128 | 3 | 48-141/27 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC16961-2 | Limits |
|---|---|---|---|---|---|
| 460-00-4 | Bromofluorobenzene (S) | 116% | 130% | 131% | 61-167% |
| 460-00-4 | Bromofluorobenzene (S) | 98% | 102% | 108% | 61-167% |

* = Outside of Control Limits.

# Volatile Surrogate Recovery Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| Method: SW846 8011 | Matrix: SO |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] | S1 [b] |
|---|---|---|---|
| MC16961-1 | BK20291.D | 125.0 | 101.0 |
| MC16961-2 | BK20292.D | 131.0 | 108.0 |
| MC16961-3 | BK20293.D | 120.0 | 102.0 |
| MC16961-4 | BK20294.D | 126.0 | 103.0 |
| OP31493-BS | BK20275.D | 114.0 | 85.0 |
| OP31493-MB | BK20274.D | 126.0 | 96.0 |
| OP31493-MS | BK20289.D | 116.0 | 98.0 |
| OP31493-MSD | BK20290.D | 130.0 | 102.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Bromofluorobenzene (S) | 61-167% |

(a) Recovery from GC signal #1
(b) Recovery from GC signal #2

# GC Surrogate Retention Time Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBK733-CC720 | Injection Date: | 12/28/12 |
| Lab File ID: | BK20273.D | Injection Time: | 14:13 |
| Instrument ID: | GCBK | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.78 | 4.45 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| OP31493-MB | BK20274.D | 12/28/12 | 14:39 | 4.78 | 4.45 |
| OP31493-BS | BK20275.D | 12/28/12 | 15:03 | 4.78 | 4.45 |
| ZZZZZZ | BK20276.D | 12/28/12 | 15:28 | 4.78 | 4.45 |
| ZZZZZZ | BK20277.D | 12/28/12 | 15:52 | 4.78 | 4.45 |
| ZZZZZZ | BK20278.D | 12/28/12 | 16:16 | 4.78 | 4.45 |
| ZZZZZZ | BK20279.D | 12/28/12 | 16:40 | 4.78 | 4.45 |
| ZZZZZZ | BK20280.D | 12/28/12 | 17:04 | 4.78 | 4.45 |
| ZZZZZZ | BK20281.D | 12/28/12 | 17:29 | 4.78 | 4.45 |
| ZZZZZZ | BK20282.D | 12/28/12 | 17:53 | 4.78 | 4.45 |
| ZZZZZZ | BK20283.D | 12/28/12 | 18:17 | 4.78 | 4.45 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

# GC Surrogate Retention Time Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Check Std: | GBK733-CC720 | Injection Date: | 12/28/12 |
| Lab File ID: | BK20284.D | Injection Time: | 18:41 |
| Instrument ID: | GCBK | Method: | SW846 8011 |

| | S1 [a] RT | S1 [b] RT |
|---|---|---|
| Check Std | 4.78 | 4.45 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT | S1 [b] RT |
|---|---|---|---|---|---|
| ZZZZZZ | BK20285.D | 12/28/12 | 19:06 | 4.77 | 4.45 |
| ZZZZZZ | BK20286.D | 12/28/12 | 19:30 | 4.78 | 4.45 |
| ZZZZZZ | BK20287.D | 12/28/12 | 19:54 | 4.78 | 4.45 |
| ZZZZZZ | BK20288.D | 12/28/12 | 20:19 | 4.78 | 4.45 |
| OP31493-MS | BK20289.D | 12/28/12 | 20:44 | 4.78 | 4.45 |
| OP31493-MSD | BK20290.D | 12/28/12 | 21:08 | 4.78 | 4.45 |
| MC16961-1 | BK20291.D | 12/28/12 | 21:32 | 4.78 | 4.45 |
| MC16961-2 | BK20292.D | 12/28/12 | 21:56 | 4.78 | 4.45 |
| MC16961-3 | BK20293.D | 12/28/12 | 22:21 | 4.78 | 4.45 |
| MC16961-4 | BK20294.D | 12/28/12 | 22:45 | 4.78 | 4.45 |
| GBK733-ECC720 | BK20295.D | 12/28/12 | 23:09 | 4.78 | 4.45 |

Surrogate Compounds

S1 = Bromofluorobenzene (S)

(a) Retention time from GC signal #1
(b) Retention time from GC signal #2

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## General Chemistry

## QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC16961
Account: SHELLWIC Shell Oil
Project: URSMOSTL: Roxana Drilling, Roxana, IL

| | | | |
|---|---|---|---|
| Sample: MC16961-1 | Analyzed: 19-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-55-13 | | | |
| Wet Weight (Total) | 32.738 | g | |
| Tare Weight | 24.118 | g | |
| Dry Weight (Total) | 30.706 | g | |
| Solids, Percent | 76.4 | % | |
| Sample: MC16961-2 | Analyzed: 19-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-55-25 | | | |
| Wet Weight (Total) | 29.987 | g | |
| Tare Weight | 19.32 | g | |
| Dry Weight (Total) | 29.421 | g | |
| Solids, Percent | 94.7 | % | |
| Sample: MC16961-3 | Analyzed: 19-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-55-31 | | | |
| Wet Weight (Total) | 30.227 | g | |
| Tare Weight | 21.003 | g | |
| Dry Weight (Total) | 29.085 | g | |
| Solids, Percent | 87.6 | % | |
| Sample: MC16961-4 | Analyzed: 19-DEC-12 by MA | | Method: SM21 2540 B MOD. |
| ClientID: VMP-55-31-DUP | | | |
| Wet Weight (Total) | 34.182 | g | |
| Tare Weight | 25.662 | g | |
| Dry Weight (Total) | 33.203 | g | |
| Solids, Percent | 88.5 | % | |

- **2011 INSTALL DATA**
- **2011 SVE INTERIM**

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | 1,1,1,2-Tetrachloroethane | | | 1,1,1-Trichloroethane (Methyl chloroform) | | | 1,1,2,2-Tetrachloroethane | | | 1,1,2-Trichloroethane | | | 1,1-Dichloroethane | | | 1,1-Dichloroethene | | | 1,1-Dichloropropene | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| MW-14 | P-130(40-42) 102411 | 40 - 42 ft | 10/24/2011 | < 0.0064 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0064 | U | |
| SVE-5 | SVE5 (15-17.5)92011 | 15 - 17.5 ft | 9/20/2011 | < 0.0061 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0061 | U | |
| SVE-6 | SUZ-06 (16-18) 101311 | 16 - 18 ft | 10/13/2011 | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | |
| | SUZ-06 (16-18) 10311-DUP | 16 - 18 ft | 10/13/2011 | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | |
| SVE-7 | SVE7 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.0061 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0061 | U | |
| SVE-7 | SVE7 (12.5-15)092111-DUP | 12.5 - 15 ft | 9/21/2011 | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | |
| SVE-8 | SVE8 (15-17.5)092111 | 15 - 17.5 ft | 9/21/2011 | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| | SVE-8 (9-10)091611 | 9 - 10 ft | 9/16/2011 | < 1.4 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | | < 1.4 | U | |
| | SVE-8 (9-10)091611-DUP | 9 - 10 ft | 9/16/2011 | < 1.5 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 1.5 | U | |
| SVE-9 | SVE9 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.79 | U | | < 0.32 | U | | < 0.32 | U | | < 0.32 | U | | < 0.32 | U | | < 0.32 | U | | < 0.79 | U | |
| SVE-10 | SVE10 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 3.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 3.4 | U | |
| | SVE10 (17.5-20)092211-DUP | 17.5 - 20 ft | 9/22/2011 | < 12 | U | | < 5 | U | | < 5 | U | | < 5 | U | | < 5 | U | | < 5 | U | | < 12 | U | |
| SVE-11 | SVE11 (12.5-15)092211 | 12.5 - 15 ft | 9/22/2011 | < 7.9 | U | | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | | < 7.9 | U | |
| | SVE11 (9-10')91911 | 9 - 10 ft | 9/19/2011 | < 1.4 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | | < 1.4 | U | |
| SVE-12 | SVE12 (15-17.5)092211 | 15 - 17.5 ft | 9/22/2011 | < 15 | U | | < 6 | U | | < 6 | U | | < 6 | U | | < 6 | U | | < 6 | U | | < 15 | U | |
| SVE-13 | SVE13 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 0.72 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.72 | U | |
| SVE-14 | SVE14 (12.5-15)91511 | 12.5 - 15 ft | 9/15/2011 | < 6.2 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 6.2 | U | |
| SVE-15 | SVE15 (17.5-20)091411 | 17.5 - 20 ft | 9/14/2011 | < 0.3 | U | | < 0.12 | U | | < 0.12 | U | | < 0.12 | U | | < 0.12 | U | | < 0.12 | U | | < 0.3 | U | |
| SVE-16 | SVE16 (15-17.5)091311 | 15 - 17.5 ft | 9/13/2011 | < 0.83 | U | | < 0.33 | U | | < 0.33 | U | | < 0.33 | U | | < 0.33 | U | | < 0.33 | U | | < 0.83 | U | |
| SVE-17 | SVE17 (17.5-20)91511 | 17.5 - 20 ft | 9/15/2011 | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | |
| SVE-18 | SVE-18 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 1.2 | U | | < 0.46 | U | | < 0.46 | U | | < 0.46 | U | | < 0.46 | U | | < 0.46 | U | | < 1.2 | U | |
| SVE-19 | SVE-19 (15-17.5)091511 | 15 - 17.5 ft | 9/15/2011 | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | |
| SVE-20 | SVE20 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| SVE-21 | SVE-21(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| SVE-22 | SVE-22(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0062 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0062 | U | |
| SVE-23 | SVE-23(24-26)-090811 | 24 - 26 ft | 9/8/2011 | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | |
| SVE-24 | SVE-24(30-34)-090711 | 30 - 34 ft | 9/7/2011 | < 3.1 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 3.1 | U | |
| SVE-26 | SVE-26(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 2.5 | U | | < 1 | U | | < 1 | U | | < 1 | U | | < 1 | U | | < 1 | U | | < 2.5 | U | |
| SVE-27 | SVE-27(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | |
| SVE-28 | SVE28 (10-12.5)092111 | 10 - 12.5 ft | 9/21/2011 | < 0.0083 | U | | < 0.0033 | U | | < 0.0033 | U | | < 0.0033 | U | | < 0.0033 | U | | < 0.0033 | U | | < 0.0083 | U | |
| | SVE28 (32-34)92011 | 32 - 34 ft | 9/20/2011 | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | |
| SVE-29 | SVE29 (1-2)91911 | 1 - 2 ft | 9/19/2011 | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | |
| | SVE29 (25-27.5)092111 | 25 - 27.5 | 9/21/2011 | < 0.91 | U | | < 0.37 | U | | < 0.37 | U | | < 0.37 | U | | < 0.37 | U | | < 0.37 | U | | < 0.91 | U | |
| | SVE29 (25-27.5)092111-DUP | 25 - 27.5 | 9/21/2011 | < 0.8 | U | | < 0.32 | U | | < 0.32 | U | | < 0.32 | U | | < 0.32 | U | | < 0.32 | U | | < 0.8 | U | |
| SVE-30 | SVE30 (25-27.5)092111 | 25 - 27.5 ft | 9/21/2011 | < 1 | U | | < 0.41 | U | | < 0.41 | U | | < 0.41 | U | | < 0.41 | U | | < 0.41 | U | | < 1 | U | |
| | SVE30 (3-4)092111 | 3 - 4 ft | 9/21/2011 | < 6.8 | U | | < 2.7 | U | | < 2.7 | U | | < 2.7 | U | | < 2.7 | U | | < 2.7 | U | | < 6.8 | U | |
| SVE-31 | SVE31 (20-22.5)092111 | 20 - 22.5 ft | 9/21/2011 | < 15 | U | | < 6 | U | | < 6 | U | | < 6 | U | | < 6 | U | | < 6 | U | | < 15 | U | |
| SVE-32 | SVE32 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.94 | U | | < 0.38 | U | | < 0.38 | U | | < 0.38 | U | | < 0.38 | U | | < 0.38 | U | | < 0.94 | U | |
| SVE-33 | SVE33 (27.5-30)092211 | 27.5 - 30 ft | 9/22/2011 | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| SVE-34 | SVE 34 (32-34) 092311 | 32 - 34 ft | 9/23/2011 | < 0.6 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.6 | U | |
| SVE-35 | SVE-3 (38-40) 092311 | 38 - 40 ft | 9/23/2011 | < 0.62 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.62 | U | |
| | SVE-35 (16-18) 092311 | 16 - 18 ft | 9/23/2011 | < 0.61 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.61 | U | |
| SVE-36 | SVE-36 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | |
| | SVE-36-2 (10-12.5) 092311 | 10 - 12.5 ft | 9/23/2011 | < 0.6 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.6 | U | |
| VMP-33 | VMP33 (10-12.5)92011 | 10 - 12.5 ft | 9/20/2011 | < 0.0065 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0065 | U | |
| | VMP33 (20-22.5)92011 | 20 - 22.5 ft | 9/20/2011 | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | |
| | VMP33 (30-31.5)92011 | 30 - 31.5 ft | 9/20/2011 | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | |
| VMP-34 | VMP34 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 0.0061 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0061 | U | |
| | VMP34 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.0051 | U | | < 0.002 | U | | < 0.002 | U | | < 0.002 | U | | < 0.002 | U | | < 0.002 | U | | < 0.0051 | U | |
| | VMP34 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | |
| VMP-35 | VMP35 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 1.3 | U | | < 0.52 | U | | < 0.52 | U | | < 0.52 | U | | < 0.52 | U | | < 0.52 | U | | < 1.3 | U | |
| | VMP35 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.0059 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0059 | U | |
| | VMP35 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.6 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.6 | U | |
| | VMP35 (8-9)91911 | 8 - 9 ft | 9/19/2011 | < 6.2 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 6.2 | U | |

SEE LAST PAGE OF TABLE FOR NOTES

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | 1,2,3-Trichlorobenzene | | | 1,2,3-Trichloropropane | | | 1,2,4-Trichlorobenzene | | | 1,2,4-Trimethylbenzene | | | 1,2-Dibromo-3-chloropropane (DBCP) | | | 1,2-Dibromoethane | | | 1,2-Dichlorobenzene | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| MW-14 | P-130(40-42) 102411 | 40 - 42 ft | 10/24/2011 | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | 0.0012 | J | | < 0.0064 | U | | < 0.0026 | U | | < 0.0026 | U | |
| SVE-5 | SVE5 (15-17.5)92011 | 15 - 17.5 ft | 9/20/2011 | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | 0.00088 | J | | < 0.0061 | U | | < 0.0024 | U | | < 0.0024 | U | |
| SVE-6 | SUZ-06 (16-18) 101311 | 16 - 18 ft | 10/13/2011 | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | 0.0021 | J | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | |
| | SUZ-06 (16-18) 10311-DUP | 16 - 18 ft | 10/13/2011 | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | 0.002 | J | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | |
| SVE-7 | SVE7 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | 0.0086 | | | < 0.0061 | U | | < 0.0025 | U | | < 0.0025 | U | |
| SVE-7 | SVE7 (12.5-15)092111-DUP | 12.5 - 15 ft | 9/21/2011 | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | 0.0012 | J | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | |
| SVE-8 | SVE8 (15-17.5)092111 | 15 - 17.5 ft | 9/21/2011 | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | 0.0914 | | J | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | SVE-8 (9-10)091611 | 9 - 10 ft | 9/16/2011 | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | 0.768 | J | | < 1.4 | U | | < 0.56 | U | | < 0.56 | U | |
| | SVE-8 (9-10)091611-DUP | 9 - 10 ft | 9/16/2011 | < 1.5 | U | | < 1.5 | U | | < 1.5 | U | | 0.925 | J | | < 1.5 | U | | < 0.6 | U | | < 0.6 | U | |
| SVE-9 | SVE9 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.79 | U | | < 0.79 | U | | < 0.79 | U | | < 0.79 | U | | < 0.79 | U | | < 0.32 | U | | < 0.32 | U | |
| SVE-10 | SVE10 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 3.4 | U | | < 3.4 | U | | < 3.4 | U | | 64.7 | | J | < 3.4 | U | | < 1.4 | U | | < 1.4 | U | |
| | SVE10 (17.5-20)092211-DUP | 17.5 - 20 ft | 9/22/2011 | < 12 | U | | < 12 | U | | < 12 | U | | 215 | | J | < 12 | U | | < 5 | U | | < 5 | U | |
| SVE-11 | SVE11 (12.5-15)092211 | 12.5 - 15 ft | 9/22/2011 | < 7.9 | U | | < 7.9 | U | | < 7.9 | U | | 215 | | | < 7.9 | U | | < 3.1 | U | | < 3.1 | U | |
| | SVE11 (9-10')91911 | 9 - 10 ft | 9/19/2011 | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | 17.7 | | | < 1.4 | U | | < 0.57 | U | | < 0.57 | U | |
| SVE-12 | SVE12 (15-17.5)092211 | 15 - 17.5 ft | 9/22/2011 | < 15 | U | | < 15 | U | | < 15 | U | | 80 | | | < 15 | U | | < 6 | U | | < 6 | U | |
| SVE-13 | SVE13 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 0.72 | U | | < 0.72 | U | | < 0.72 | U | | 10.9 | | | < 0.72 | U | | < 0.29 | U | | < 0.29 | U | |
| SVE-14 | SVE14 (12.5-15)91511 | 12.5 - 15 ft | 9/15/2011 | < 6.2 | U | | < 6.2 | U | | < 6.2 | U | | < 6.2 | U | | < 6.2 | U | | < 2.5 | U | | < 2.5 | U | |
| SVE-15 | SVE15 (17.5-20)091411 | 17.5 - 20 ft | 9/14/2011 | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | 2.25 | | | < 0.3 | U | | < 0.12 | U | | < 0.12 | U | |
| SVE-16 | SVE16 (15-17.5)091311 | 15 - 17.5 ft | 9/13/2011 | < 0.83 | U | | < 0.83 | U | | < 0.83 | U | | < 0.83 | U | | < 0.83 | U | | < 0.33 | U | | < 0.33 | U | |
| SVE-17 | SVE17 (17.5-20)91511 | 17.5 - 20 ft | 9/15/2011 | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | 0.0127 | | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | |
| SVE-18 | SVE-18 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | 1.74 | | | < 1.2 | U | | < 0.46 | U | | < 0.46 | U | |
| SVE-19 | SVE-19 (15-17.5)091511 | 15 - 17.5 ft | 9/15/2011 | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | |
| SVE-20 | SVE20 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | 0.00081 | J | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | |
| SVE-21 | SVE-21(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | |
| SVE-22 | SVE-22(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0062 | U | | < 0.0062 | U | | < 0.0062 | U | | < 0.0062 | U | | < 0.0062 | U | | < 0.0025 | U | | < 0.0025 | U | |
| SVE-23 | SVE-23(24-26)-090811 | 24 - 26 ft | 9/8/2011 | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | |
| SVE-24 | SVE-24(30-34)-090711 | 30 - 34 ft | 9/7/2011 | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | | 0.451 | J | | < 3.1 | U | | < 1.2 | U | | < 1.2 | U | |
| SVE-26 | SVE-26(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 1 | U | | < 1 | U | |
| SVE-27 | SVE-27(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | |
| SVE-28 | SVE28 (10-12.5)092111 | 10 - 12.5 ft | 9/21/2011 | < 0.0083 | U | | < 0.0083 | U | | < 0.0083 | U | | 0.0012 | J | | < 0.0083 | U | | < 0.0033 | U | | < 0.0033 | U | |
| | SVE28 (32-34)92011 | 32 - 34 ft | 9/20/2011 | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | 0.0012 | J | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | |
| SVE-29 | SVE29 (1-2)91911 | 1 - 2 ft | 9/19/2011 | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | 0.0031 | J | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | SVE29 (25-27.5)092111 | 25 - 27.5 | 9/21/2011 | < 0.91 | U | | < 0.91 | U | | < 0.91 | U | | < 0.91 | U | | < 0.91 | U | | < 0.37 | U | | < 0.37 | U | |
| | SVE29 (25-27.5)092111-DUP | 25 - 27.5 | 9/21/2011 | < 0.8 | U | | < 0.8 | U | | < 0.8 | U | | < 0.8 | U | | < 0.8 | U | | < 0.32 | U | | < 0.32 | U | |
| SVE-30 | SVE30 (25-27.5)092111 | 25 - 27.5 ft | 9/21/2011 | < 1 | U | | < 1 | U | | < 1 | U | | 1.13 | | | < 1 | U | | < 0.41 | U | | < 0.41 | U | |
| | SVE30 (3-4)092111 | 3 - 4 ft | 9/21/2011 | < 6.8 | U | | < 6.8 | U | | < 6.8 | U | | 78 | | | < 6.8 | U | | < 2.7 | U | | < 2.7 | U | |
| SVE-31 | SVE31 (20-22.5)092111 | 20 - 22.5 ft | 9/21/2011 | < 15 | U | | < 15 | U | | < 15 | U | | 524 | | | < 15 | U | | < 6 | U | | < 6 | U | |
| SVE-32 | SVE32 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.94 | U | | < 0.94 | U | | < 0.94 | U | | 1.59 | | | < 0.94 | U | | < 0.38 | U | | < 0.38 | U | |
| SVE-33 | SVE33 (27.5-30)092211 | 27.5 - 30 ft | 9/22/2011 | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | 0.0049 | J | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | |
| SVE-34 | SVE 34 (32-34) 092311 | 32 - 34 ft | 9/23/2011 | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | 18.5 | | | < 0.6 | U | | < 0.24 | U | | < 0.24 | U | |
| SVE-35 | SVE-3 (38-40) 092311 | 38 - 40 ft | 9/23/2011 | < 0.62 | U | | < 0.62 | U | | < 0.62 | U | | 0.0442 | J | | < 0.62 | U | | < 0.25 | U | | < 0.25 | U | |
| | SVE-35 (16-18) 092311 | 16 - 18 ft | 9/23/2011 | < 0.61 | U | | < 0.61 | U | | < 0.61 | U | | 0.235 | J | | < 0.61 | U | | < 0.25 | U | | < 0.25 | U | |
| SVE-36 | SVE-36 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | |
| | SVE-36-2 (10-12.5) 092311 | 10 - 12.5 ft | 9/23/2011 | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.24 | U | | < 0.24 | U | |
| VMP-33 | VMP33 (10-12.5)92011 | 10 - 12.5 ft | 9/20/2011 | < 0.0065 | U | | < 0.0065 | U | | < 0.0065 | U | | 0.001 | J | | < 0.0065 | U | | < 0.0026 | U | | < 0.0026 | U | |
| | VMP33 (20-22.5)92011 | 20 - 22.5 ft | 9/20/2011 | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | |
| | VMP33 (30-31.5)92011 | 30 - 31.5 ft | 9/20/2011 | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | 0.001 | J | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | |
| VMP-34 | VMP34 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0024 | U | | < 0.0024 | U | |
| | VMP34 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | 0.0041 | J | J | < 0.0051 | U | | < 0.002 | U | | < 0.002 | U | |
| | VMP34 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | |
| VMP-35 | VMP35 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 1.3 | U | | < 1.3 | U | | < 1.3 | U | | < 1.3 | U | | < 1.3 | U | | < 0.52 | U | | < 0.52 | U | |
| | VMP35 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | | 0.0116 | | | < 0.0059 | U | | < 0.0024 | U | | < 0.0024 | U | |
| | VMP35 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | 0.233 | J | | < 0.6 | U | | < 0.24 | U | | < 0.24 | U | |
| | VMP35 (8-9)91911 | 8 - 9 ft | 9/19/2011 | < 6.2 | U | | < 6.2 | U | | < 6.2 | U | | 141 | | | < 6.2 | U | | < 2.5 | U | | < 2.5 | U | |

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | 1,2-Dichloroethane | | | 1,2-Dichloropropane | | | 1,3,5-Trimethylbenzene | | | 1,3-Dichlorobenzene | | | 1,3-Dichloropropane | | | 1,4-Dichlorobenzene | | | 1,4-Dioxane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| MW-14 | P-130(40-42) 102411 | 40 - 42 ft | 10/24/2011 | < 0.0026 | U | | < 0.0026 | U | | < 0.0064 | U | | < 0.0026 | U | | < 0.0064 | U | | < 0.0026 | U | | < 0.032 | U | |
| SVE-5 | SVE5 (15-17.5)92011 | 15 - 17.5 ft | 9/20/2011 | < 0.0024 | U | | < 0.0024 | U | | < 0.0061 | U | | < 0.0024 | U | | < 0.0061 | U | | < 0.0024 | U | | < 0.03 | U | |
| SVE-6 | SUZ-06 (16-18) 101311 | 16 - 18 ft | 10/13/2011 | < 0.0023 | U | | < 0.0023 | U | | 0.0013 | J | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.028 | U | |
| | SUZ-06 (16-18) 10311-DUP | 16 - 18 ft | 10/13/2011 | < 0.0021 | U | | < 0.0021 | U | | 0.0012 | J | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.026 | U | |
| SVE-7 | SVE7 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.0025 | U | | < 0.0025 | U | | 0.0019 | J | | < 0.0025 | U | | < 0.0061 | U | | < 0.0025 | U | | < 0.031 | U | |
| SVE-7 | SVE7 (12.5-15)092111-DUP | 12.5 - 15 ft | 9/21/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.028 | U | |
| SVE-8 | SVE8 (15-17.5)092111 | 15 - 17.5 ft | 9/21/2011 | < 0.0022 | U | | < 0.0022 | U | | 0.0333 | | J | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.028 | U | |
| | SVE-8 (9-10)091611 | 9 - 10 ft | 9/16/2011 | < 0.56 | U | | < 0.56 | U | | 0.479 | J | | < 0.56 | U | | < 1.4 | U | | < 0.56 | U | | < 7 | U | |
| | SVE-8 (9-10)091611-DUP | 9 - 10 ft | 9/16/2011 | < 0.6 | U | | < 0.6 | U | | 0.587 | J | | < 0.6 | U | | < 1.5 | U | | < 0.6 | U | | < 7.5 | U | |
| SVE-9 | SVE9 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.32 | U | | < 0.32 | U | | < 0.79 | U | | < 0.32 | U | | < 0.79 | U | | < 0.32 | U | | < 3.9 | U | |
| SVE-10 | SVE10 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 1.4 | U | | < 1.4 | U | | 14.3 | | | < 1.4 | U | | < 3.4 | U | | < 1.4 | U | | < 17 | U | |
| | SVE10 (17.5-20)092211-DUP | 17.5 - 20 ft | 9/22/2011 | < 5 | U | | < 5 | U | | 52.7 | | | < 5 | U | | < 12 | U | | < 5 | U | | < 62 | U | |
| SVE-11 | SVE11 (12.5-15)092211 | 12.5 - 15 ft | 9/22/2011 | < 3.1 | U | | < 3.1 | U | | 41.2 | | | < 3.1 | U | | < 7.9 | U | | < 3.1 | U | | < 39 | U | |
| | SVE11 (9-10')91911 | 9 - 10 ft | 9/19/2011 | < 0.57 | U | | < 0.57 | U | | 0.458 | J | | < 0.57 | U | | < 1.4 | U | | < 0.57 | U | | < 7.1 | U | |
| SVE-12 | SVE12 (15-17.5)092211 | 15 - 17.5 ft | 9/22/2011 | < 6 | U | | < 6 | U | | 24.8 | | | < 6 | U | | < 15 | U | | < 6 | U | | < 75 | U | |
| SVE-13 | SVE13 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 0.29 | U | | < 0.29 | U | | 0.876 | | | < 0.29 | U | | < 0.72 | U | | < 0.29 | U | | < 3.6 | U | |
| SVE-14 | SVE14 (12.5-15)91511 | 12.5 - 15 ft | 9/15/2011 | < 2.5 | U | | < 2.5 | U | | 0.677 | J | | < 2.5 | U | | < 6.2 | U | | < 2.5 | U | | < 31 | U | |
| SVE-15 | SVE15 (17.5-20)091411 | 17.5 - 20 ft | 9/14/2011 | < 0.12 | U | | < 0.12 | U | | 0.561 | | | < 0.12 | U | | < 0.3 | U | | < 0.12 | U | | < 1.5 | U | |
| SVE-16 | SVE16 (15-17.5)091311 | 15 - 17.5 ft | 9/13/2011 | < 0.33 | U | | < 0.33 | U | | < 0.83 | U | | < 0.33 | U | | < 0.83 | U | | < 0.33 | U | | < 4.1 | U | |
| SVE-17 | SVE17 (17.5-20)91511 | 17.5 - 20 ft | 9/15/2011 | < 0.0023 | U | | < 0.0023 | U | | 0.0054 | J | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.029 | U | |
| SVE-18 | SVE-18 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 0.46 | U | | < 0.46 | U | | 0.37 | J | | < 0.46 | U | | < 1.2 | U | | < 0.46 | U | | < 5.8 | U | |
| SVE-19 | SVE-19 (15-17.5)091511 | 15 - 17.5 ft | 9/15/2011 | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.029 | U | |
| SVE-20 | SVE20 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.028 | U | |
| SVE-21 | SVE-21(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.027 | U | |
| SVE-22 | SVE-22(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0025 | U | | < 0.0025 | U | | < 0.0062 | U | | < 0.0025 | U | | < 0.0062 | U | | < 0.0025 | U | | < 0.031 | U | |
| SVE-23 | SVE-23(24-26)-090811 | 24 - 26 ft | 9/8/2011 | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.027 | U | |
| SVE-24 | SVE-24(30-34)-090711 | 30 - 34 ft | 9/7/2011 | < 1.2 | U | | < 1.2 | U | | 0.2 | J | | < 1.2 | U | | < 3.1 | U | | < 1.2 | U | | < 15 | U | |
| SVE-26 | SVE-26(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 1 | U | | < 1 | U | | < 2.5 | U | | < 1 | U | | < 2.5 | U | | < 1 | U | | < 13 | U | |
| SVE-27 | SVE-27(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.027 | U | |
| SVE-28 | SVE28 (10-12.5)092111 | 10 - 12.5 ft | 9/21/2011 | < 0.0033 | U | | < 0.0033 | U | | < 0.0083 | U | | < 0.0033 | U | | < 0.0083 | U | | < 0.0033 | U | | < 0.042 | U | |
| | SVE28 (32-34)92011 | 32 - 34 ft | 9/20/2011 | < 0.0022 | U | | < 0.0022 | U | | 0.00058 | J | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.027 | U | |
| SVE-29 | SVE29 (1-2)91911 | 1 - 2 ft | 9/19/2011 | < 0.0022 | U | | < 0.0022 | U | | 0.0012 | J | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.028 | U | |
| | SVE29 (25-27.5)092111 | 25 - 27.5 | 9/21/2011 | < 0.37 | U | | < 0.37 | U | | < 0.91 | U | | < 0.37 | U | | < 0.91 | U | | < 0.37 | U | | < 4.6 | U | |
| | SVE29 (25-27.5)092111-DUP | 25 - 27.5 | 9/21/2011 | < 0.32 | U | | < 0.32 | U | | < 0.8 | U | | < 0.32 | U | | < 0.8 | U | | < 0.32 | U | | < 4 | U | |
| SVE-30 | SVE30 (25-27.5)092111 | 25 - 27.5 ft | 9/21/2011 | < 0.41 | U | | < 0.41 | U | | 0.329 | J | | < 0.41 | U | | < 1 | U | | < 0.41 | U | | < 5.1 | U | |
| | SVE30 (3-4)092111 | 3 - 4 ft | 9/21/2011 | < 2.7 | U | | < 2.7 | U | | 23.2 | | | < 2.7 | U | | < 6.8 | U | | < 2.7 | U | | < 34 | U | |
| SVE-31 | SVE31 (20-22.5)092111 | 20 - 22.5 ft | 9/21/2011 | < 6 | U | | < 6 | U | | 153 | | | < 6 | U | | < 15 | U | | < 6 | U | | < 75 | U | |
| SVE-32 | SVE32 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.38 | U | | < 0.38 | U | | < 0.94 | U | | < 0.38 | U | | < 0.94 | U | | < 0.38 | U | | < 4.7 | U | |
| SVE-33 | SVE33 (27.5-30)092211 | 27.5 - 30 ft | 9/22/2011 | < 0.0022 | U | | < 0.0022 | U | | 0.0014 | J | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.028 | U | |
| SVE-34 | SVE 34 (32-34) 092311 | 32 - 34 ft | 9/23/2011 | < 0.24 | U | | < 0.24 | U | | 5.63 | | | < 0.24 | U | | < 0.6 | U | | < 0.24 | U | | < 3 | U | |
| SVE-35 | SVE-3 (38-40) 092311 | 38 - 40 ft | 9/23/2011 | < 0.25 | U | | < 0.25 | U | | 0.0449 | J | | < 0.25 | U | | < 0.62 | U | | < 0.25 | U | | < 3.1 | U | |
| | SVE-35 (16-18) 092311 | 16 - 18 ft | 9/23/2011 | < 0.25 | U | | < 0.25 | U | | < 0.61 | U | | < 0.25 | U | | < 0.61 | U | | < 0.25 | U | | < 3.1 | U | |
| SVE-36 | SVE-36 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.029 | U | |
| | SVE-36-2 (10-12.5) 092311 | 10 - 12.5 ft | 9/23/2011 | < 0.24 | U | | < 0.24 | U | | < 0.6 | U | | < 0.24 | U | | < 0.6 | U | | < 0.24 | U | | < 3 | U | |
| VMP-33 | VMP33 (10-12.5)92011 | 10 - 12.5 ft | 9/20/2011 | < 0.0026 | U | | < 0.0026 | U | | < 0.0065 | U | | < 0.0026 | U | | < 0.0065 | U | | < 0.0026 | U | | < 0.033 | U | |
| | VMP33 (20-22.5)92011 | 20 - 22.5 ft | 9/20/2011 | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.026 | U | |
| | VMP33 (30-31.5)92011 | 30 - 31.5 ft | 9/20/2011 | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.029 | U | |
| VMP-34 | VMP34 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 0.0024 | U | | < 0.0024 | U | | < 0.0061 | U | | < 0.0024 | U | | < 0.0061 | U | | < 0.0024 | U | | < 0.031 | U | |
| | VMP34 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.002 | U | | < 0.002 | U | | 0.0011 | J | J | < 0.002 | U | | < 0.0051 | U | | < 0.002 | U | | < 0.026 | U | |
| | VMP34 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.029 | U | |
| VMP-35 | VMP35 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 0.52 | U | | < 0.52 | U | | 0.171 | J | | < 0.52 | U | | < 1.3 | U | | < 0.52 | U | | < 6.5 | U | |
| | VMP35 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.0024 | U | | < 0.0024 | U | | 0.0035 | J | | < 0.0024 | U | | < 0.0059 | U | | < 0.0024 | U | | < 0.029 | U | |
| | VMP35 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.24 | U | | < 0.24 | U | | 0.0771 | J | | < 0.24 | U | | < 0.6 | U | | < 0.24 | U | | < 3 | U | |
| | VMP35 (8-9)91911 | 8 - 9 ft | 9/19/2011 | < 2.5 | U | | < 2.5 | U | | 39.9 | | | < 2.5 | U | | < 6.2 | U | | < 2.5 | U | | < 31 | U | |

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | 2,2-Dichloropropane | | | 2-Butanone | | | 2-Chloroethyl vinyl ether | | | 2-Chlorotoluene | | | 2-Hexanone (Methyl N-Butyl Ketone) | | | 4-Chlorotoluene | | | 4-Methyl-2-pentanone (Methyl Isobutyl Ketone) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| MW-14 | P-130(40-42) 102411 | 40 - 42 ft | 10/24/2011 | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | |
| SVE-5 | SVE5 (15-17.5)92011 | 15 - 17.5 ft | 9/20/2011 | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | |
| SVE-6 | SUZ-06 (16-18) 101311 | 16 - 18 ft | 10/13/2011 | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | |
| | SUZ-06 (16-18) 10311-DUP | 16 - 18 ft | 10/13/2011 | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | |
| SVE-7 | SVE7 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | |
| SVE-7 | SVE7 (12.5-15)092111-DUP | 12.5 - 15 ft | 9/21/2011 | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | |
| SVE-8 | SVE8 (15-17.5)092111 | 15 - 17.5 ft | 9/21/2011 | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | |
| | SVE-8 (9-10)091611 | 9 - 10 ft | 9/16/2011 | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | |
| | SVE-8 (9-10)091611-DUP | 9 - 10 ft | 9/16/2011 | < 1.5 | U | | < 1.5 | U | | < 1.5 | U | | < 1.5 | U | | < 1.5 | U | | < 1.5 | U | | < 1.5 | U | |
| SVE-9 | SVE9 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.79 | U | | < 0.79 | U | | < 0.79 | U | | < 0.79 | U | | < 0.79 | U | | < 0.79 | U | | < 0.79 | U | |
| SVE-10 | SVE10 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 3.4 | U | | < 3.4 | U | | < 3.4 | U | | < 3.4 | U | | < 3.4 | U | | < 3.4 | U | | < 3.4 | U | |
| | SVE10 (17.5-20)092211-DUP | 17.5 - 20 ft | 9/22/2011 | < 12 | U | | < 12 | U | | < 12 | U | | < 12 | U | | < 12 | U | | < 12 | U | | < 12 | U | |
| SVE-11 | SVE11 (12.5-15)092211 | 12.5 - 15 ft | 9/22/2011 | < 7.9 | U | | < 7.9 | U | | < 7.9 | U | | < 7.9 | U | | < 7.9 | U | | < 7.9 | U | | < 7.9 | U | |
| | SVE11 (9-10')91911 | 9 - 10 ft | 9/19/2011 | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | |
| SVE-12 | SVE12 (15-17.5)092211 | 15 - 17.5 ft | 9/22/2011 | < 15 | U | | < 15 | U | | < 15 | U | | < 15 | U | | < 15 | U | | < 15 | U | | < 15 | U | |
| SVE-13 | SVE13 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 0.72 | U | | < 0.72 | U | | < 0.72 | U | | < 0.72 | U | | < 0.72 | U | | < 0.72 | U | | < 0.72 | U | |
| SVE-14 | SVE14 (12.5-15)91511 | 12.5 - 15 ft | 9/15/2011 | < 6.2 | U | | < 6.2 | U | | < 6.2 | U | | < 6.2 | U | | < 6.2 | U | | < 6.2 | U | | < 6.2 | U | |
| SVE-15 | SVE15 (17.5-20)091411 | 17.5 - 20 ft | 9/14/2011 | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | |
| SVE-16 | SVE16 (15-17.5)091311 | 15 - 17.5 ft | 9/13/2011 | < 0.83 | U | | < 0.83 | U | | < 0.83 | U | | < 0.83 | U | | < 0.83 | U | | < 0.83 | U | | < 0.83 | U | |
| SVE-17 | SVE17 (17.5-20)91511 | 17.5 - 20 ft | 9/15/2011 | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | |
| SVE-18 | SVE-18 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | |
| SVE-19 | SVE-19 (15-17.5)091511 | 15 - 17.5 ft | 9/15/2011 | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | |
| SVE-20 | SVE20 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | |
| SVE-21 | SVE-21(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | |
| SVE-22 | SVE-22(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0062 | U | | < 0.0062 | U | | < 0.0062 | U | | < 0.0062 | U | | < 0.0062 | U | | < 0.0062 | U | | < 0.0062 | U | |
| SVE-23 | SVE-23(24-26)-090811 | 24 - 26 ft | 9/8/2011 | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | |
| SVE-24 | SVE-24(30-34)-090711 | 30 - 34 ft | 9/7/2011 | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | |
| SVE-26 | SVE-26(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | |
| SVE-27 | SVE-27(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| SVE-28 | SVE28 (10-12.5)092111 | 10 - 12.5 ft | 9/21/2011 | < 0.0083 | U | | < 0.0083 | U | | < 0.0083 | U | | < 0.0083 | U | | < 0.0083 | U | | < 0.0083 | U | | < 0.0083 | U | |
| | SVE28 (32-34)92011 | 32 - 34 ft | 9/20/2011 | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| SVE-29 | SVE29 (1-2)91911 | 1 - 2 ft | 9/19/2011 | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | |
| | SVE29 (25-27.5)092111 | 25 - 27.5 | 9/21/2011 | < 0.91 | U | | < 0.91 | U | | < 0.91 | U | | < 0.91 | U | | < 0.91 | U | | < 0.91 | U | | < 0.91 | U | |
| | SVE29 (25-27.5)092111-DUP | 25 - 27.5 | 9/21/2011 | < 0.8 | U | | < 0.8 | U | | < 0.8 | U | | < 0.8 | U | | < 0.8 | U | | < 0.8 | U | | < 0.8 | U | |
| SVE-30 | SVE30 (25-27.5)092111 | 25 - 27.5 ft | 9/21/2011 | < 1 | U | | < 1 | U | | < 1 | U | | < 1 | U | | < 1 | U | | < 1 | U | | < 1 | U | |
| | SVE30 (3-4)092111 | 3 - 4 ft | 9/21/2011 | < 6.8 | U | | < 6.8 | U | | < 6.8 | U | | < 6.8 | U | | < 6.8 | U | | < 6.8 | U | | < 6.8 | U | |
| SVE-31 | SVE31 (20-22.5)092111 | 20 - 22.5 ft | 9/21/2011 | < 15 | U | | < 15 | U | | < 15 | U | | < 15 | U | | < 15 | U | | < 15 | U | | < 15 | U | |
| SVE-32 | SVE32 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.94 | U | | < 0.94 | U | | < 0.94 | U | | < 0.94 | U | | < 0.94 | U | | < 0.94 | U | | < 0.94 | U | |
| SVE-33 | SVE33 (27.5-30)092211 | 27.5 - 30 ft | 9/22/2011 | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | |
| SVE-34 | SVE 34 (32-34) 092311 | 32 - 34 ft | 9/23/2011 | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | |
| SVE-35 | SVE-3 (38-40) 092311 | 38 - 40 ft | 9/23/2011 | < 0.62 | U | | < 0.62 | U | | < 0.62 | U | | < 0.62 | U | | < 0.62 | U | | < 0.62 | U | | < 0.62 | U | |
| | SVE-35 (16-18) 092311 | 16 - 18 ft | 9/23/2011 | < 0.61 | U | | < 0.61 | U | | < 0.61 | U | | < 0.61 | U | | < 0.61 | U | | < 0.61 | U | | < 0.61 | U | |
| SVE-36 | SVE-36 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | |
| | SVE-36-2 (10-12.5) 092311 | 10 - 12.5 ft | 9/23/2011 | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | |
| VMP-33 | VMP33 (10-12.5)92011 | 10 - 12.5 ft | 9/20/2011 | < 0.0065 | U | | < 0.0065 | U | | < 0.0065 | U | | < 0.0065 | U | | < 0.0065 | U | | < 0.0065 | U | | < 0.0065 | U | |
| | VMP33 (20-22.5)92011 | 20 - 22.5 ft | 9/20/2011 | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | |
| | VMP33 (30-31.5)92011 | 30 - 31.5 ft | 9/20/2011 | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | |
| VMP-34 | VMP34 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | |
| | VMP34 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.0051 | U | |
| | VMP34 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | |
| VMP-35 | VMP35 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 1.3 | U | | < 1.3 | U | | < 1.3 | U | | < 1.3 | U | | < 1.3 | U | | < 1.3 | U | | < 1.3 | U | |
| | VMP35 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | |
| | VMP35 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | |
| | VMP35 (8-9)91911 | 8 - 9 ft | 9/19/2011 | < 6.2 | U | | < 6.2 | U | | < 6.2 | U | | < 6.2 | U | | < 6.2 | U | | < 6.2 | U | | < 6.2 | U | |

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | Acetone | | | Acrolein | | | Acrylonitrile | | | Benzene | | | Bromobenzene | | | Bromochloromethane | | | Bromodichloromethane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| MW-14 | P-130(40-42) 102411 | 40 - 42 ft | 10/24/2011 | < 0.0315 | B | U | < 0.032 | U | | < 0.0064 | U | | 0.0021 | | | < 0.0064 | U | | < 0.0064 | U | | < 0.0026 | U | |
| SVE-5 | SVE5 (15-17.5)92011 | 15 - 17.5 ft | 9/20/2011 | < 0.0176 | | U | < 0.03 | U | | < 0.0061 | U | | < 0.00061 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0024 | U | |
| SVE-6 | SUZ-06 (16-18) 101311 | 16 - 18 ft | 10/13/2011 | < 0.0214 | B | U | < 0.028 | U | | < 0.0057 | U | | 0.0022 | | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | |
| | SUZ-06 (16-18) 10311-DUP | 16 - 18 ft | 10/13/2011 | < 0.0262 | B | U | < 0.026 | U | | < 0.0052 | U | | 0.0026 | | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | |
| SVE-7 | SVE7 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.0306 | | U | < 0.031 | U | | < 0.0061 | U | | 0.0014 | | | < 0.0061 | U | | < 0.0061 | U | | < 0.0025 | U | |
| SVE-7 | SVE7 (12.5-15)092111-DUP | 12.5 - 15 ft | 9/21/2011 | < 0.0415 | | U | < 0.028 | U | | < 0.0056 | U | | < 0.00056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | |
| SVE-8 | SVE8 (15-17.5)092111 | 15 - 17.5 ft | 9/21/2011 | < 0.0055 | U | | < 0.028 | U | | < 0.0055 | U | | 0.0183 | | J | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | |
| | SVE-8 (9-10)091611 | 9 - 10 ft | 9/16/2011 | < 1.4 | U | | < 7 | U | | < 1.4 | U | | < 0.14 | U | | < 1.4 | U | | < 1.4 | U | | < 0.56 | U | |
| | SVE-8 (9-10)091611-DUP | 9 - 10 ft | 9/16/2011 | < 1.5 | U | | < 7.5 | U | | < 1.5 | U | | < 0.15 | U | | < 1.5 | U | | < 1.5 | U | | < 0.6 | U | |
| SVE-9 | SVE9 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.79 | U | | < 3.9 | U | | < 0.79 | U | | 0.863 | | | < 0.79 | U | | < 0.79 | U | | < 0.32 | U | |
| SVE-10 | SVE10 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 3.4 | U | | < 17 | U | | < 3.4 | U | | < 0.34 | U | | < 3.4 | U | | < 3.4 | U | | < 1.4 | U | |
| | SVE10 (17.5-20)092211-DUP | 17.5 - 20 ft | 9/22/2011 | < 12 | U | | < 62 | U | | < 12 | U | | 1.13 | J | | < 12 | U | | < 12 | U | | < 5 | U | |
| SVE-11 | SVE11 (12.5-15)092211 | 12.5 - 15 ft | 9/22/2011 | < 7.9 | U | | < 39 | U | | < 7.9 | U | | 1.93 | | | < 7.9 | U | | < 7.9 | U | | < 3.1 | U | |
| | SVE11 (9-10')91911 | 9 - 10 ft | 9/19/2011 | < 1.4 | U | | < 7.1 | U | UJ | < 1.4 | U | | < 0.14 | U | | < 1.4 | U | | < 1.4 | U | | < 0.57 | U | |
| SVE-12 | SVE12 (15-17.5)092211 | 15 - 17.5 ft | 9/22/2011 | < 15 | U | | < 75 | U | | < 15 | U | | 66.4 | | | < 15 | U | | < 15 | U | | < 6 | U | |
| SVE-13 | SVE13 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 0.72 | U | | < 3.6 | U | | < 0.72 | U | | 0.0598 | J | | < 0.72 | U | | < 0.72 | U | | < 0.29 | U | |
| SVE-14 | SVE14 (12.5-15)91511 | 12.5 - 15 ft | 9/15/2011 | < 6.2 | U | | < 31 | U | | < 6.2 | U | | < 0.62 | U | | < 6.2 | U | | < 6.2 | U | | < 2.5 | U | |
| SVE-15 | SVE15 (17.5-20)091411 | 17.5 - 20 ft | 9/14/2011 | < 0.3 | U | | < 1.5 | U | UJ | < 0.3 | U | | < 0.03 | U | | < 0.3 | U | | < 0.3 | U | | < 0.12 | U | |
| SVE-16 | SVE16 (15-17.5)091311 | 15 - 17.5 ft | 9/13/2011 | < 0.83 | U | | < 4.1 | U | UJ | < 0.83 | U | | < 0.083 | U | | < 0.83 | U | | < 0.83 | U | | < 0.33 | U | |
| SVE-17 | SVE17 (17.5-20)91511 | 17.5 - 20 ft | 9/15/2011 | < 0.0372 | | U | < 0.029 | U | | < 0.0058 | U | | 0.0026 | | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | |
| SVE-18 | SVE-18 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 1.2 | U | | < 5.8 | U | | < 1.2 | U | | < 0.12 | U | | < 1.2 | U | | < 1.2 | U | | < 0.46 | U | |
| SVE-19 | SVE-19 (15-17.5)091511 | 15 - 17.5 ft | 9/15/2011 | < 0.0326 | | U | < 0.029 | U | | < 0.0057 | U | | 0.0052 | | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | |
| SVE-20 | SVE20 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.0046 | J | U | < 0.028 | U | | < 0.0055 | U | | 0.0701 | | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | |
| SVE-21 | SVE-21(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0055 | U | | < 0.027 | U | | < 0.0055 | U | | 0.00038 | J | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | |
| SVE-22 | SVE-22(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0062 | U | | < 0.031 | U | | < 0.0062 | U | | 0.0303 | | | < 0.0062 | U | | < 0.0062 | U | | < 0.0025 | U | |
| SVE-23 | SVE-23(24-26)-090811 | 24 - 26 ft | 9/8/2011 | < 0.0053 | U | | < 0.027 | U | | < 0.0053 | U | | 0.0042 | | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | |
| SVE-24 | SVE-24(30-34)-090711 | 30 - 34 ft | 9/7/2011 | < 3.1 | U | | < 15 | U | | < 3.1 | U | | 55.6 | | | < 3.1 | U | | < 3.1 | U | | < 1.2 | U | |
| SVE-26 | SVE-26(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 2.5 | U | | < 13 | U | | < 2.5 | U | | 29.3 | | | < 2.5 | U | | < 2.5 | U | | < 1 | U | |
| SVE-27 | SVE-27(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 0.0054 | U | | < 0.027 | U | | < 0.0054 | U | | 0.222 | | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | |
| SVE-28 | SVE28 (10-12.5)092111 | 10 - 12.5 ft | 9/21/2011 | < 0.0083 | U | | < 0.042 | U | | < 0.0083 | U | | < 0.00083 | U | | < 0.0083 | U | | < 0.0083 | U | | < 0.0033 | U | |
| | SVE28 (32-34)92011 | 32 - 34 ft | 9/20/2011 | < 0.0303 | | U | < 0.027 | U | | < 0.0054 | U | | 0.00035 | J | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | |
| SVE-29 | SVE29 (1-2)91911 | 1 - 2 ft | 9/19/2011 | < 0.199 | | U | < 0.028 | U | | < 0.0056 | U | | 0.0074 | | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | |
| | SVE29 (25-27.5)092111 | 25 - 27.5 | 9/21/2011 | < 0.91 | U | | < 4.6 | U | | < 0.91 | U | | < 0.091 | U | | < 0.91 | U | | < 0.91 | U | | < 0.37 | U | |
| | SVE29 (25-27.5)092111-DUP | 25 - 27.5 | 9/21/2011 | < 0.8 | U | | < 4 | U | | < 0.8 | U | | < 0.08 | U | | < 0.8 | U | | < 0.8 | U | | < 0.32 | U | |
| SVE-30 | SVE30 (25-27.5)092111 | 25 - 27.5 ft | 9/21/2011 | < 1 | U | | < 5.1 | U | | < 1 | U | | < 0.1 | U | | < 1 | U | | < 1 | U | | < 0.41 | U | |
| | SVE30 (3-4)092111 | 3 - 4 ft | 9/21/2011 | < 6.8 | U | | < 34 | U | | < 6.8 | U | | < 0.68 | U | | < 6.8 | U | | < 6.8 | U | | < 2.7 | U | |
| SVE-31 | SVE31 (20-22.5)092111 | 20 - 22.5 ft | 9/21/2011 | < 15 | U | | < 75 | U | | < 15 | U | | < 1.5 | U | | < 15 | U | | < 15 | U | | < 6 | U | |
| SVE-32 | SVE32 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.94 | U | | < 4.7 | U | | < 0.94 | U | | 0.0405 | J | | < 0.94 | U | | < 0.94 | U | | < 0.38 | U | |
| SVE-33 | SVE33 (27.5-30)092211 | 27.5 - 30 ft | 9/22/2011 | < 0.0256 | | U | < 0.028 | U | | < 0.0055 | U | | 0.0041 | | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | |
| SVE-34 | SVE 34 (32-34) 092311 | 32 - 34 ft | 9/23/2011 | < 0.6 | U | | < 3 | U | | < 0.6 | U | | 1.91 | | | < 0.6 | U | | < 0.6 | U | | < 0.24 | U | |
| SVE-35 | SVE-3 (38-40) 092311 | 38 - 40 ft | 9/23/2011 | < 0.62 | U | | < 3.1 | U | | < 0.62 | U | | < 0.062 | U | | < 0.62 | U | | < 0.62 | U | | < 0.25 | U | |
| | SVE-35 (16-18) 092311 | 16 - 18 ft | 9/23/2011 | < 0.61 | U | | < 3.1 | U | | < 0.61 | U | | < 0.061 | U | | < 0.61 | U | | < 0.61 | U | | < 0.25 | U | |
| SVE-36 | SVE-36 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 0.003 | J | U | < 0.029 | U | | < 0.0058 | U | | < 0.00058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | |
| | SVE-36-2 (10-12.5) 092311 | 10 - 12.5 ft | 9/23/2011 | < 0.6 | U | | < 3 | U | | < 0.6 | U | | < 0.06 | U | | < 0.6 | U | | < 0.6 | U | | < 0.24 | U | |
| VMP-33 | VMP33 (10-12.5)92011 | 10 - 12.5 ft | 9/20/2011 | < 0.0383 | | U | < 0.033 | U | | < 0.0065 | U | | < 0.00065 | U | | < 0.0065 | U | | < 0.0065 | U | | < 0.0026 | U | |
| | VMP33 (20-22.5)92011 | 20 - 22.5 ft | 9/20/2011 | < 0.0053 | U | | < 0.026 | U | | < 0.0053 | U | | < 0.00053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | |
| | VMP33 (30-31.5)92011 | 30 - 31.5 ft | 9/20/2011 | < 0.0154 | | U | < 0.029 | U | | < 0.0058 | U | | < 0.00058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | |
| VMP-34 | VMP34 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 0.0061 | U | | < 0.031 | U | | < 0.0061 | U | | 0.0031 | | | < 0.0061 | U | | < 0.0061 | U | | < 0.0024 | U | |
| | VMP34 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.0051 | U | | < 0.026 | U | | < 0.0051 | U | | 0.0065 | | J | < 0.0051 | U | | < 0.0051 | U | | < 0.002 | U | |
| | VMP34 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0058 | U | | < 0.029 | U | | < 0.0058 | U | | 0.0021 | | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | |
| VMP-35 | VMP35 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 1.3 | U | | < 6.5 | U | | < 1.3 | U | | 0.57 | | | < 1.3 | U | | < 1.3 | U | | < 0.52 | U | |
| | VMP35 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.0059 | U | | < 0.029 | U | | < 0.0059 | U | | 0.0737 | | | < 0.0059 | U | | < 0.0059 | U | | < 0.0024 | U | |
| | VMP35 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.6 | U | | < 3 | U | | < 0.6 | U | | < 0.06 | U | | < 0.6 | U | | < 0.6 | U | | < 0.24 | U | |
| | VMP35 (8-9)91911 | 8 - 9 ft | 9/19/2011 | < 6.2 | U | | < 31 | U | UJ | < 6.2 | U | | < 0.62 | U | | < 6.2 | U | | < 6.2 | U | | < 2.5 | U | |

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | Bromoform | | | Bromomethane | | | Carbon disulfide | | | Carbon tetrachloride | | | Chlorobenzene | | | Chlorodibromomethane | | | Chloroethane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| MW-14 | P-130(40-42) 102411 | 40 - 42 ft | 10/24/2011 | < 0.0026 | U | | < 0.0026 | U | | 0.0055 | J | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0064 | U | |
| SVE-5 | SVE5 (15-17.5)92011 | 15 - 17.5 ft | 9/20/2011 | < 0.0024 | U | | < 0.0024 | U | | < 0.0061 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0061 | U | |
| SVE-6 | SUZ-06 (16-18) 101311 | 16 - 18 ft | 10/13/2011 | < 0.0023 | U | | < 0.0023 | U | | 0.0049 | J | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | |
| | SUZ-06 (16-18) 10311-DUP | 16 - 18 ft | 10/13/2011 | < 0.0021 | U | | < 0.0021 | U | | 0.0045 | J | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | |
| SVE-7 | SVE7 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.0025 | U | | < 0.0025 | U | | 0.0017 | J | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0061 | U | |
| SVE-7 | SVE7 (12.5-15)092111-DUP | 12.5 - 15 ft | 9/21/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | |
| SVE-8 | SVE8 (15-17.5)092111 | 15 - 17.5 ft | 9/21/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| | SVE-8 (9-10)091611 | 9 - 10 ft | 9/16/2011 | < 0.56 | U | | < 0.56 | U | | < 1.4 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | | < 1.4 | U | |
| | SVE-8 (9-10)091611-DUP | 9 - 10 ft | 9/16/2011 | < 0.6 | U | | < 0.6 | U | | < 1.5 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 1.5 | U | |
| SVE-9 | SVE9 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.32 | U | | < 0.32 | U | | < 0.79 | U | | < 0.32 | U | | < 0.32 | U | | < 0.32 | U | | < 0.79 | U | |
| SVE-10 | SVE10 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 1.4 | U | | < 1.4 | U | | < 3.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 3.4 | U | |
| | SVE10 (17.5-20)092211-DUP | 17.5 - 20 ft | 9/22/2011 | < 5 | U | | < 5 | U | | < 12 | U | | < 5 | U | | < 5 | U | | < 5 | U | | < 12 | U | |
| SVE-11 | SVE11 (12.5-15)092211 | 12.5 - 15 ft | 9/22/2011 | < 3.1 | U | | < 3.1 | U | | < 7.9 | U | | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | | < 7.9 | U | |
| | SVE11 (9-10')91911 | 9 - 10 ft | 9/19/2011 | < 0.57 | U | | < 0.57 | U | | < 1.4 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | | < 1.4 | U | |
| SVE-12 | SVE12 (15-17.5)092211 | 15 - 17.5 ft | 9/22/2011 | < 6 | U | | < 6 | U | | < 15 | U | | < 6 | U | | < 6 | U | | < 6 | U | | < 15 | U | |
| SVE-13 | SVE13 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 0.29 | U | | < 0.29 | U | | < 0.72 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.72 | U | |
| SVE-14 | SVE14 (12.5-15)91511 | 12.5 - 15 ft | 9/15/2011 | < 2.5 | U | | < 2.5 | U | | < 6.2 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 6.2 | U | |
| SVE-15 | SVE15 (17.5-20)091411 | 17.5 - 20 ft | 9/14/2011 | < 0.12 | U | | < 0.12 | U | | < 0.3 | U | | < 0.12 | U | | < 0.12 | U | | < 0.12 | U | | < 0.3 | U | |
| SVE-16 | SVE16 (15-17.5)091311 | 15 - 17.5 ft | 9/13/2011 | < 0.33 | U | | < 0.33 | U | | < 0.83 | U | | < 0.33 | U | | < 0.33 | U | | < 0.33 | U | | < 0.83 | U | |
| SVE-17 | SVE17 (17.5-20)91511 | 17.5 - 20 ft | 9/15/2011 | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | |
| SVE-18 | SVE-18 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 0.46 | U | | < 0.46 | U | | < 1.2 | U | | < 0.46 | U | | < 0.46 | U | | < 0.46 | U | | < 1.2 | U | |
| SVE-19 | SVE-19 (15-17.5)091511 | 15 - 17.5 ft | 9/15/2011 | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | |
| SVE-20 | SVE20 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| SVE-21 | SVE-21(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| SVE-22 | SVE-22(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0025 | U | | < 0.0025 | U | | < 0.0062 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0062 | U | |
| SVE-23 | SVE-23(24-26)-090811 | 24 - 26 ft | 9/8/2011 | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | |
| SVE-24 | SVE-24(30-34)-090711 | 30 - 34 ft | 9/7/2011 | < 1.2 | U | | < 1.2 | U | | < 3.1 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 3.1 | U | |
| SVE-26 | SVE-26(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 1 | U | | < 1 | U | | < 2.5 | U | | < 1 | U | | < 1 | U | | < 1 | U | | < 2.5 | U | |
| SVE-27 | SVE-27(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 0.0022 | U | | < 0.0022 | U | | 0.0021 | J | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | |
| SVE-28 | SVE28 (10-12.5)092111 | 10 - 12.5 ft | 9/21/2011 | < 0.0033 | U | | < 0.0033 | U | | < 0.0083 | U | | < 0.0033 | U | | < 0.0033 | U | | < 0.0033 | U | | < 0.0083 | U | |
| | SVE28 (32-34)92011 | 32 - 34 ft | 9/20/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | |
| SVE-29 | SVE29 (1-2)91911 | 1 - 2 ft | 9/19/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | |
| | SVE29 (25-27.5)092111 | 25 - 27.5 | 9/21/2011 | < 0.37 | U | | < 0.37 | U | | < 0.91 | U | | < 0.37 | U | | < 0.37 | U | | < 0.37 | U | | < 0.91 | U | |
| | SVE29 (25-27.5)092111-DUP | 25 - 27.5 | 9/21/2011 | < 0.32 | U | | < 0.32 | U | | < 0.8 | U | | < 0.32 | U | | < 0.32 | U | | < 0.32 | U | | < 0.8 | U | |
| SVE-30 | SVE30 (25-27.5)092111 | 25 - 27.5 ft | 9/21/2011 | < 0.41 | U | | < 0.41 | U | | < 1 | U | | < 0.41 | U | | < 0.41 | U | | < 0.41 | U | | < 1 | U | |
| | SVE30 (3-4)092111 | 3 - 4 ft | 9/21/2011 | < 2.7 | U | | < 2.7 | U | | < 6.8 | U | | < 2.7 | U | | < 2.7 | U | | < 2.7 | U | | < 6.8 | U | |
| SVE-31 | SVE31 (20-22.5)092111 | 20 - 22.5 ft | 9/21/2011 | < 6 | U | | < 6 | U | | < 15 | U | | < 6 | U | | < 6 | U | | < 6 | U | | < 15 | U | |
| SVE-32 | SVE32 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.38 | U | | < 0.38 | U | | < 0.94 | U | | < 0.38 | U | | < 0.38 | U | | < 0.38 | U | | < 0.94 | U | |
| SVE-33 | SVE33 (27.5-30)092211 | 27.5 - 30 ft | 9/22/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| SVE-34 | SVE 34 (32-34) 092311 | 32 - 34 ft | 9/23/2011 | < 0.24 | U | | < 0.24 | U | | < 0.6 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.6 | U | |
| SVE-35 | SVE-3 (38-40) 092311 | 38 - 40 ft | 9/23/2011 | < 0.25 | U | | < 0.25 | U | | < 0.62 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.62 | U | |
| | SVE-35 (16-18) 092311 | 16 - 18 ft | 9/23/2011 | < 0.25 | U | | < 0.25 | U | | < 0.61 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.61 | U | |
| SVE-36 | SVE-36 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | |
| | SVE-36-2 (10-12.5) 092311 | 10 - 12.5 ft | 9/23/2011 | < 0.24 | U | | < 0.24 | U | | < 0.6 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.6 | U | |
| VMP-33 | VMP33 (10-12.5)92011 | 10 - 12.5 ft | 9/20/2011 | < 0.0026 | U | | < 0.0026 | U | | < 0.0065 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0065 | U | |
| | VMP33 (20-22.5)92011 | 20 - 22.5 ft | 9/20/2011 | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | |
| | VMP33 (30-31.5)92011 | 30 - 31.5 ft | 9/20/2011 | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | |
| VMP-34 | VMP34 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 0.0024 | U | | < 0.0024 | U | | < 0.0061 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0061 | U | |
| | VMP34 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.002 | U | | 0.002 | | J | < 0.0051 | U | | < 0.002 | U | | < 0.002 | U | | < 0.002 | U | | < 0.0051 | U | |
| | VMP34 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | |
| VMP-35 | VMP35 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 0.52 | U | | < 0.52 | U | | < 1.3 | U | | < 0.52 | U | | < 0.52 | U | | < 0.52 | U | | < 1.3 | U | |
| | VMP35 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.0024 | U | | < 0.0024 | U | | < 0.0059 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0059 | U | |
| | VMP35 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.24 | U | | < 0.24 | U | | < 0.6 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.6 | U | |
| | VMP35 (8-9)91911 | 8 - 9 ft | 9/19/2011 | < 2.5 | U | | < 2.5 | U | | < 6.2 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 6.2 | U | |

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | Chloroform | | | Chloromethane | | | cis-1,2-Dichloroethene | | | cis-1,3-Dichloropropene | | | Cymene (p-Isopropyltoluene) | | | Dibromomethane | | | Dichlorodifluoromethane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| MW-14 | P-130(40-42) 102411 | 40 - 42 ft | 10/24/2011 | < 0.0026 | U | | < 0.0064 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0026 | U | |
| SVE-5 | SVE5 (15-17.5)92011 | 15 - 17.5 ft | 9/20/2011 | < 0.0024 | U | | < 0.0061 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0024 | U | |
| SVE-6 | SUZ-06 (16-18) 101311 | 16 - 18 ft | 10/13/2011 | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | |
| | SUZ-06 (16-18) 10311-DUP | 16 - 18 ft | 10/13/2011 | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | |
| SVE-7 | SVE7 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.0025 | U | | < 0.0061 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0025 | U | |
| SVE-7 | SVE7 (12.5-15)092111-DUP | 12.5 - 15 ft | 9/21/2011 | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | |
| SVE-8 | SVE8 (15-17.5)092111 | 15 - 17.5 ft | 9/21/2011 | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | 0.115 | | J | < 0.0055 | U | | < 0.0022 | U | |
| | SVE-8 (9-10)091611 | 9 - 10 ft | 9/16/2011 | < 0.56 | U | | < 1.4 | U | | < 0.56 | U | | < 0.56 | U | | 1.03 | J | | < 1.4 | U | | < 0.56 | U | UJ |
| | SVE-8 (9-10)091611-DUP | 9 - 10 ft | 9/16/2011 | < 0.6 | U | | < 1.5 | U | | < 0.6 | U | | < 0.6 | U | | 1.25 | J | | < 1.5 | U | | < 0.6 | U | UJ |
| SVE-9 | SVE9 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.32 | U | | < 0.79 | U | | < 0.32 | U | | < 0.32 | U | | < 0.79 | U | | < 0.79 | U | | < 0.32 | U | |
| SVE-10 | SVE10 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 1.4 | U | | < 3.4 | U | | < 1.4 | U | | < 1.4 | U | | < 3.4 | U | | < 3.4 | U | | < 1.4 | U | |
| | SVE10 (17.5-20)092211-DUP | 17.5 - 20 ft | 9/22/2011 | < 5 | U | | < 12 | U | | < 5 | U | | < 5 | U | | 2.8 | J | | < 12 | U | | < 5 | U | |
| SVE-11 | SVE11 (12.5-15)092211 | 12.5 - 15 ft | 9/22/2011 | < 3.1 | U | | < 7.9 | U | | < 3.1 | U | | < 3.1 | U | | 4.63 | J | | < 7.9 | U | | < 3.1 | U | |
| | SVE11 (9-10')91911 | 9 - 10 ft | 9/19/2011 | < 0.57 | U | | < 1.4 | U | | < 0.57 | U | | < 0.57 | U | | 0.801 | J | | < 1.4 | U | | < 0.57 | U | |
| SVE-12 | SVE12 (15-17.5)092211 | 15 - 17.5 ft | 9/22/2011 | < 6 | U | | < 15 | U | | < 6 | U | | < 6 | U | | 8.13 | J | | < 15 | U | | < 6 | U | |
| SVE-13 | SVE13 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 0.29 | U | | < 0.72 | U | | < 0.29 | U | | < 0.29 | U | | 0.261 | J | | < 0.72 | U | | < 0.29 | U | |
| SVE-14 | SVE14 (12.5-15)91511 | 12.5 - 15 ft | 9/15/2011 | < 2.5 | U | | < 6.2 | U | | < 2.5 | U | | < 2.5 | U | | 0.622 | J | | < 6.2 | U | | < 2.5 | U | |
| SVE-15 | SVE15 (17.5-20)091411 | 17.5 - 20 ft | 9/14/2011 | < 0.12 | U | | < 0.3 | U | | < 0.12 | U | | < 0.12 | U | | < 0.3 | U | | < 0.3 | U | | < 0.12 | U | |
| SVE-16 | SVE16 (15-17.5)091311 | 15 - 17.5 ft | 9/13/2011 | < 0.33 | U | | < 0.83 | U | | < 0.33 | U | | < 0.33 | U | | < 0.83 | U | | < 0.83 | U | | < 0.33 | U | |
| SVE-17 | SVE17 (17.5-20)91511 | 17.5 - 20 ft | 9/15/2011 | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | 0.0224 | | | < 0.0058 | U | | < 0.0023 | U | |
| SVE-18 | SVE-18 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 0.46 | U | | < 1.2 | U | | < 0.46 | U | | < 0.46 | U | | 0.322 | J | | < 1.2 | U | | < 0.46 | U | |
| SVE-19 | SVE-19 (15-17.5)091511 | 15 - 17.5 ft | 9/15/2011 | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | |
| SVE-20 | SVE20 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | |
| SVE-21 | SVE-21(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | |
| SVE-22 | SVE-22(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0025 | U | | < 0.0062 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0062 | U | | < 0.0062 | U | | < 0.0025 | U | |
| SVE-23 | SVE-23(24-26)-090811 | 24 - 26 ft | 9/8/2011 | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | |
| SVE-24 | SVE-24(30-34)-090711 | 30 - 34 ft | 9/7/2011 | < 1.2 | U | | < 3.1 | U | | < 1.2 | U | | < 1.2 | U | | < 3.1 | U | | < 3.1 | U | | < 1.2 | U | |
| SVE-26 | SVE-26(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 1 | U | | < 2.5 | U | | < 1 | U | | < 1 | U | | < 2.5 | U | | < 2.5 | U | | < 1 | U | |
| SVE-27 | SVE-27(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | |
| SVE-28 | SVE28 (10-12.5)092111 | 10 - 12.5 ft | 9/21/2011 | < 0.0033 | U | | < 0.0083 | U | | < 0.0033 | U | | < 0.0033 | U | | < 0.0083 | U | | < 0.0083 | U | | < 0.0033 | U | |
| | SVE28 (32-34)92011 | 32 - 34 ft | 9/20/2011 | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | |
| SVE-29 | SVE29 (1-2)91911 | 1 - 2 ft | 9/19/2011 | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | 0.00039 | J | | < 0.0056 | U | | < 0.0022 | U | |
| | SVE29 (25-27.5)092111 | 25 - 27.5 | 9/21/2011 | < 0.37 | U | | < 0.91 | U | | < 0.37 | U | | < 0.37 | U | | < 0.91 | U | | < 0.91 | U | | < 0.37 | U | |
| | SVE29 (25-27.5)092111-DUP | 25 - 27.5 | 9/21/2011 | < 0.32 | U | | < 0.8 | U | | < 0.32 | U | | < 0.32 | U | | < 0.8 | U | | < 0.8 | U | | < 0.32 | U | |
| SVE-30 | SVE30 (25-27.5)092111 | 25 - 27.5 ft | 9/21/2011 | < 0.41 | U | | < 1 | U | | < 0.41 | U | | < 0.41 | U | | < 1 | U | | < 1 | U | | < 0.41 | U | |
| | SVE30 (3-4)092111 | 3 - 4 ft | 9/21/2011 | < 2.7 | U | | < 6.8 | U | | < 2.7 | U | | < 2.7 | U | | 1.23 | J | | < 6.8 | U | | < 2.7 | U | |
| SVE-31 | SVE31 (20-22.5)092111 | 20 - 22.5 ft | 9/21/2011 | < 6 | U | | < 15 | U | | < 6 | U | | < 6 | U | | 5.67 | J | | < 15 | U | | < 6 | U | |
| SVE-32 | SVE32 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.38 | U | | < 0.94 | U | | < 0.38 | U | | < 0.38 | U | | 0.133 | J | | < 0.94 | U | | < 0.38 | U | |
| SVE-33 | SVE33 (27.5-30)092211 | 27.5 - 30 ft | 9/22/2011 | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | |
| SVE-34 | SVE 34 (32-34) 092311 | 32 - 34 ft | 9/23/2011 | < 0.24 | U | | < 0.6 | U | | < 0.24 | U | | < 0.24 | U | | 0.975 | | | < 0.6 | U | | < 0.24 | U | |
| SVE-35 | SVE-3 (38-40) 092311 | 38 - 40 ft | 9/23/2011 | < 0.25 | U | | < 0.62 | U | | < 0.25 | U | | < 0.25 | U | | < 0.62 | U | | < 0.62 | U | | < 0.25 | U | |
| | SVE-35 (16-18) 092311 | 16 - 18 ft | 9/23/2011 | < 0.25 | U | | < 0.61 | U | | < 0.25 | U | | < 0.25 | U | | 0.0713 | J | | < 0.61 | U | | < 0.25 | U | |
| SVE-36 | SVE-36 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | |
| | SVE-36-2 (10-12.5) 092311 | 10 - 12.5 ft | 9/23/2011 | < 0.24 | U | | < 0.6 | U | | < 0.24 | U | | < 0.24 | U | | 0.0234 | J | | < 0.6 | U | | < 0.24 | U | |
| VMP-33 | VMP33 (10-12.5)92011 | 10 - 12.5 ft | 9/20/2011 | < 0.0026 | U | | < 0.0065 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0065 | U | | < 0.0065 | U | | < 0.0026 | U | |
| | VMP33 (20-22.5)92011 | 20 - 22.5 ft | 9/20/2011 | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | |
| | VMP33 (30-31.5)92011 | 30 - 31.5 ft | 9/20/2011 | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | |
| VMP-34 | VMP34 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 0.0024 | U | | < 0.0061 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0024 | U | |
| | VMP34 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.002 | U | | < 0.0051 | U | | < 0.002 | U | | < 0.002 | U | | < 0.0051 | U | | < 0.0051 | U | | < 0.002 | U | |
| | VMP34 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | |
| VMP-35 | VMP35 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 0.52 | U | | < 1.3 | U | | < 0.52 | U | | < 0.52 | U | | 0.731 | J | | < 1.3 | U | | < 0.52 | U | |
| | VMP35 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.0024 | U | | < 0.0059 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0024 | U | |
| | VMP35 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.24 | U | | < 0.6 | U | | < 0.24 | U | | < 0.24 | U | | < 0.6 | U | | < 0.6 | U | | < 0.24 | U | |
| | VMP35 (8-9)91911 | 8 - 9 ft | 9/19/2011 | < 2.5 | U | | < 6.2 | U | | < 2.5 | U | | < 2.5 | U | | 1.78 | J | | < 6.2 | U | | < 2.5 | U | |

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | Dichloromethane (Methylene chloride) | | | Ethyl methacrylate | | | Ethylbenzene | | | Hexachlorobutadiene | | | Isopropylbenzene (Cumene) | | | m,p-Xylene | | | Methyl tert-Butyl Ether (MTBE) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| MW-14 | P-130(40-42) 102411 | 40 - 42 ft | 10/24/2011 | < 0.0026 | U | | < 0.0064 | U | | 0.006 | | | < 0.0064 | U | | < 0.0064 | U | | 0.0016 | J | | < 0.0026 | U | |
| SVE-5 | SVE5 (15-17.5)92011 | 15 - 17.5 ft | 9/20/2011 | < 0.0024 | U | | < 0.0061 | U | | 0.0029 | | | < 0.0061 | U | | < 0.0061 | U | | < 0.0024 | U | | < 0.0024 | U | |
| SVE-6 | SUZ-06 (16-18) 101311 | 16 - 18 ft | 10/13/2011 | < 0.0023 | U | | < 0.0057 | U | | 0.0059 | | | < 0.0057 | U | | < 0.0057 | U | | 0.0028 | | | < 0.0023 | U | |
| | SUZ-06 (16-18) 10311-DUP | 16 - 18 ft | 10/13/2011 | < 0.0021 | U | | < 0.0052 | U | | 0.0058 | | | < 0.0052 | U | | < 0.0052 | U | | 0.0028 | | | < 0.0021 | U | |
| SVE-7 | SVE7 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.0025 | U | | < 0.0061 | U | | 0.0086 | | | < 0.0061 | U | | < 0.0061 | U | | 0.0124 | | | < 0.0025 | U | |
| SVE-7 | SVE7 (12.5-15)092111-DUP | 12.5 - 15 ft | 9/21/2011 | < 0.0022 | U | | < 0.0056 | U | | 0.0028 | | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | |
| SVE-8 | SVE8 (15-17.5)092111 | 15 - 17.5 ft | 9/21/2011 | < 0.0022 | U | | < 0.0055 | U | | 0.0066 | | J | < 0.0055 | U | | 0.104 | J | | 0.0215 | | J | < 0.0022 | U | |
| | SVE-8 (9-10)091611 | 9 - 10 ft | 9/16/2011 | < 0.56 | U | | < 1.4 | U | | 0.609 | | | < 1.4 | U | | 7.16 | | | < 0.56 | U | | < 0.56 | U | |
| | SVE-8 (9-10)091611-DUP | 9 - 10 ft | 9/16/2011 | < 0.6 | U | | < 1.5 | U | | 0.608 | | | < 1.5 | U | | 7.81 | | | < 0.6 | U | | < 0.6 | U | |
| SVE-9 | SVE9 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.32 | U | | < 0.79 | U | | < 0.32 | U | | < 0.79 | U | | < 0.79 | U | | < 0.32 | U | | < 0.32 | U | |
| SVE-10 | SVE10 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 1.4 | U | | < 3.4 | U | | 12.4 | | J | < 3.4 | U | | 3.28 | J | | 29.7 | | J | < 1.4 | U | |
| | SVE10 (17.5-20)092211-DUP | 17.5 - 20 ft | 9/22/2011 | < 5 | U | | < 12 | U | | 74.7 | | J | < 12 | U | | 14.1 | | | 175 | | J | < 5 | U | |
| SVE-11 | SVE11 (12.5-15)092211 | 12.5 - 15 ft | 9/22/2011 | < 3.1 | U | | < 7.9 | U | | 55.1 | | | < 7.9 | U | | 19.6 | | | 65.2 | | | < 3.1 | U | |
| | SVE11 (9-10')91911 | 9 - 10 ft | 9/19/2011 | < 0.57 | U | | < 1.4 | U | | 1.68 | | | < 1.4 | U | | 2.85 | | | 0.98 | | | < 0.57 | U | |
| SVE-12 | SVE12 (15-17.5)092211 | 15 - 17.5 ft | 9/22/2011 | < 6 | U | | < 15 | U | | 103 | | | < 15 | U | | 13 | J | | 203 | | | < 6 | U | |
| SVE-13 | SVE13 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 0.29 | U | | < 0.72 | U | | 1.35 | | | < 0.72 | U | | 1.06 | | | 1.85 | | | < 0.29 | U | |
| SVE-14 | SVE14 (12.5-15)91511 | 12.5 - 15 ft | 9/15/2011 | < 2.5 | U | | < 6.2 | U | | < 2.5 | U | | < 6.2 | U | | 2.23 | J | | < 2.5 | U | | < 2.5 | U | |
| SVE-15 | SVE15 (17.5-20)091411 | 17.5 - 20 ft | 9/14/2011 | < 0.12 | U | | < 0.3 | U | | < 0.12 | U | | < 0.3 | U | | < 0.3 | U | | < 0.12 | U | | < 0.12 | U | |
| SVE-16 | SVE16 (15-17.5)091311 | 15 - 17.5 ft | 9/13/2011 | < 0.33 | U | | < 0.83 | U | | < 0.33 | U | | < 0.83 | U | | < 0.83 | U | | < 0.33 | U | | < 0.33 | U | |
| SVE-17 | SVE17 (17.5-20)91511 | 17.5 - 20 ft | 9/15/2011 | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0058 | U | | 0.0839 | | | 0.00091 | J | | < 0.0023 | U | |
| SVE-18 | SVE-18 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 0.46 | U | | < 1.2 | U | | 1.09 | | | < 1.2 | U | | 0.318 | J | | 1.91 | | | < 0.46 | U | |
| SVE-19 | SVE-19 (15-17.5)091511 | 15 - 17.5 ft | 9/15/2011 | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | |
| SVE-20 | SVE20 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0055 | U | | 0.00097 | J | | < 0.0022 | U | | < 0.0022 | U | |
| SVE-21 | SVE-21(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | |
| SVE-22 | SVE-22(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0025 | U | | < 0.0062 | U | | < 0.0025 | U | | < 0.0062 | U | | < 0.0062 | U | | < 0.0025 | U | | < 0.0025 | U | |
| SVE-23 | SVE-23(24-26)-090811 | 24 - 26 ft | 9/8/2011 | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | |
| SVE-24 | SVE-24(30-34)-090711 | 30 - 34 ft | 9/7/2011 | < 1.2 | U | | < 3.1 | U | | < 1.2 | U | | < 3.1 | U | | < 3.1 | U | | < 1.2 | U | | < 1.2 | U | |
| SVE-26 | SVE-26(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 1 | U | | < 2.5 | U | | < 1 | U | | < 2.5 | U | | < 2.5 | U | | < 1 | U | | < 1 | U | |
| SVE-27 | SVE-27(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | |
| SVE-28 | SVE28 (10-12.5)092111 | 10 - 12.5 ft | 9/21/2011 | < 0.0033 | U | | < 0.0083 | U | | 0.0012 | J | | < 0.0083 | U | | < 0.0083 | U | | < 0.0033 | U | | < 0.0033 | U | |
| | SVE28 (32-34)92011 | 32 - 34 ft | 9/20/2011 | < 0.0022 | U | | < 0.0054 | U | | 0.0011 | J | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | |
| SVE-29 | SVE29 (1-2)91911 | 1 - 2 ft | 9/19/2011 | < 0.0022 | U | | < 0.0056 | U | | 0.0023 | | | < 0.0056 | U | | 0.001 | J | | 0.0099 | | | < 0.0022 | U | |
| | SVE29 (25-27.5)092111 | 25 - 27.5 | 9/21/2011 | < 0.37 | U | | < 0.91 | U | | < 0.37 | U | | < 0.91 | U | | < 0.91 | U | | < 0.37 | U | | < 0.37 | U | |
| | SVE29 (25-27.5)092111-DUP | 25 - 27.5 | 9/21/2011 | < 0.32 | U | | < 0.8 | U | | < 0.32 | U | | < 0.8 | U | | 0.0728 | J | | < 0.32 | U | | < 0.32 | U | |
| SVE-30 | SVE30 (25-27.5)092111 | 25 - 27.5 ft | 9/21/2011 | < 0.41 | U | | < 1 | U | | 0.334 | J | | < 1 | U | | 0.116 | J | | 0.845 | | | < 0.41 | U | |
| | SVE30 (3-4)092111 | 3 - 4 ft | 9/21/2011 | < 2.7 | U | | < 6.8 | U | | 25.6 | | | < 6.8 | U | | 4.34 | J | | 62.7 | | | < 2.7 | U | |
| SVE-31 | SVE31 (20-22.5)092111 | 20 - 22.5 ft | 9/21/2011 | < 6 | U | | < 15 | U | | 514 | | | < 15 | U | | 40.4 | | | 1280 | | | < 6 | U | |
| SVE-32 | SVE32 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.38 | U | | < 0.94 | U | | 0.349 | J | | < 0.94 | U | | 0.205 | J | | 0.284 | J | | < 0.38 | U | |
| SVE-33 | SVE33 (27.5-30)092211 | 27.5 - 30 ft | 9/22/2011 | < 0.0022 | U | | < 0.0055 | U | | 0.0022 | | | < 0.0055 | U | | 0.00064 | J | | 0.0033 | | | < 0.0022 | U | |
| SVE-34 | SVE 34 (32-34) 092311 | 32 - 34 ft | 9/23/2011 | < 0.24 | U | | < 0.6 | U | | 17.6 | | | < 0.6 | U | | 2.23 | | J | 38.4 | | | < 0.24 | U | |
| SVE-35 | SVE-3 (38-40) 092311 | 38 - 40 ft | 9/23/2011 | < 0.25 | U | | < 0.62 | U | | < 0.25 | U | | < 0.62 | U | | < 0.62 | U | | < 0.25 | U | | < 0.25 | U | |
| | SVE-35 (16-18) 092311 | 16 - 18 ft | 9/23/2011 | < 0.25 | U | | < 0.61 | U | | 0.161 | J | | < 0.61 | U | | 0.242 | J | J | 0.403 | | | < 0.25 | U | |
| SVE-36 | SVE-36 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | |
| | SVE-36-2 (10-12.5) 092311 | 10 - 12.5 ft | 9/23/2011 | < 0.24 | U | | < 0.6 | U | | < 0.24 | U | | < 0.6 | U | | 0.0832 | J | J | < 0.24 | U | | < 0.24 | U | |
| VMP-33 | VMP33 (10-12.5)92011 | 10 - 12.5 ft | 9/20/2011 | < 0.0026 | U | | < 0.0065 | U | | 0.0011 | J | | < 0.0065 | U | | < 0.0065 | U | | < 0.0026 | U | | < 0.0026 | U | |
| | VMP33 (20-22.5)92011 | 20 - 22.5 ft | 9/20/2011 | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | |
| | VMP33 (30-31.5)92011 | 30 - 31.5 ft | 9/20/2011 | < 0.0023 | U | | < 0.0058 | U | | 0.0007 | J | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | |
| VMP-34 | VMP34 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 0.0024 | U | | < 0.0061 | U | | 0.0127 | | | < 0.0061 | U | | < 0.0061 | U | | 0.003 | | | < 0.0024 | U | |
| | VMP34 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.002 | U | | < 0.0051 | U | | 0.0133 | | J | < 0.0051 | U | | 0.0051 | | J | 0.0051 | | J | < 0.002 | U | |
| | VMP34 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0023 | U | | < 0.0058 | U | | 0.0065 | | | < 0.0058 | U | | < 0.0058 | U | | 0.0018 | J | | < 0.0023 | U | |
| VMP-35 | VMP35 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 0.52 | U | | < 1.3 | U | | 0.692 | | | < 1.3 | U | | 1.73 | | | 0.785 | | | < 0.52 | U | |
| | VMP35 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.0024 | U | | < 0.0059 | U | | 0.0269 | | | < 0.0059 | U | | 0.0028 | J | | 0.0333 | | | < 0.0024 | U | |
| | VMP35 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.24 | U | | < 0.6 | U | | 0.175 | J | | < 0.6 | U | | 0.0461 | J | | 0.112 | J | | < 0.24 | U | |
| | VMP35 (8-9)91911 | 8 - 9 ft | 9/19/2011 | < 2.5 | U | | < 6.2 | U | | 95.7 | | | < 6.2 | U | | 9.17 | | | 256 | | | < 2.5 | U | |

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | Naphthalene | | | n-Butylbenzene | | | n-Propylbenzene | | | o-Xylenes | | | sec-Butylbenzene | | | Styrene | | | tert-Butylbenzene | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| MW-14 | P-130(40-42) 102411 | 40 - 42 ft | 10/24/2011 | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | 0.00074 | J | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | |
| SVE-5 | SVE5 (15-17.5)92011 | 15 - 17.5 ft | 9/20/2011 | < 0.0061 | U | | < 0.0061 | U | | 0.00077 | J | | < 0.0024 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | |
| SVE-6 | SUZ-06 (16-18) 101311 | 16 - 18 ft | 10/13/2011 | < 0.0057 | U | | < 0.0057 | U | | 0.00068 | J | | 0.00078 | J | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | |
| | SUZ-06 (16-18) 10311-DUP | 16 - 18 ft | 10/13/2011 | < 0.0052 | U | | < 0.0052 | U | | 0.00061 | J | | 0.00078 | J | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | |
| SVE-7 | SVE7 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.0061 | U | | < 0.0061 | U | | 0.0025 | J | | 0.0081 | | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | |
| SVE-7 | SVE7 (12.5-15)092111-DUP | 12.5 - 15 ft | 9/21/2011 | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | |
| SVE-8 | SVE8 (15-17.5)092111 | 15 - 17.5 ft | 9/21/2011 | 0.0144 | | J | 0.104 | J | | 0.155 | J | | 0.0038 | | J | 0.348 | | J | < 0.0055 | U | | 0.0215 | | J |
| | SVE-8 (9-10)091611 | 9 - 10 ft | 9/16/2011 | < 1.4 | U | | 6.37 | | | 10.8 | | | < 0.56 | U | | 2.73 | | | < 1.4 | U | | < 1.4 | U | |
| | SVE-8 (9-10)091611-DUP | 9 - 10 ft | 9/16/2011 | < 1.5 | U | | 7.36 | | | 12.1 | | | < 0.6 | U | | 3.17 | | | < 1.5 | U | | < 1.5 | U | |
| SVE-9 | SVE9 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.79 | U | | < 0.79 | U | | < 0.79 | U | | < 0.32 | U | | < 0.79 | U | | < 0.79 | U | | < 0.79 | U | |
| SVE-10 | SVE10 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | 10.8 | | | < 3.4 | U | | 10.1 | | | 1.98 | | | < 3.4 | U | | < 3.4 | U | | < 3.4 | U | |
| | SVE10 (17.5-20)092211-DUP | 17.5 - 20 ft | 9/22/2011 | 22.3 | | | < 12 | U | | 40.7 | | | 16 | | | 4.23 | J | | < 12 | U | | < 12 | U | |
| SVE-11 | SVE11 (12.5-15)092211 | 12.5 - 15 ft | 9/22/2011 | 47.8 | | | < 7.9 | U | | 69.2 | | | 4.59 | | | 9.91 | | | < 7.9 | U | | 5.63 | J | |
| | SVE11 (9-10')91911 | 9 - 10 ft | 9/19/2011 | 4.2 | | | 5.89 | | | 10.2 | | | < 0.57 | U | | 1.63 | | | < 1.4 | U | | 1.2 | J | |
| SVE-12 | SVE12 (15-17.5)092211 | 15 - 17.5 ft | 9/22/2011 | 28.8 | | | < 15 | U | | 18.6 | | | 62.4 | | | 5.93 | J | | < 15 | U | | < 15 | U | |
| SVE-13 | SVE13 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | 4.21 | | | < 0.72 | U | | 3.11 | | | 0.0672 | J | | 0.411 | J | | < 0.72 | U | | < 0.72 | U | |
| SVE-14 | SVE14 (12.5-15)91511 | 12.5 - 15 ft | 9/15/2011 | < 6.2 | U | | 2.11 | J | | 3.18 | J | | < 2.5 | U | | 1.99 | J | | < 6.2 | U | | < 6.2 | U | |
| SVE-15 | SVE15 (17.5-20)091411 | 17.5 - 20 ft | 9/14/2011 | 1.4 | | | 1.18 | | | 0.868 | | | < 0.12 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | |
| SVE-16 | SVE16 (15-17.5)091311 | 15 - 17.5 ft | 9/13/2011 | < 0.83 | U | | < 0.83 | U | | < 0.83 | U | | < 0.33 | U | | < 0.83 | U | | < 0.83 | U | | < 0.83 | U | |
| SVE-17 | SVE17 (17.5-20)91511 | 17.5 - 20 ft | 9/15/2011 | 0.231 | | | 0.107 | | | 0.107 | | | < 0.0023 | U | | 0.0636 | | | < 0.0058 | U | | 0.0038 | J | |
| SVE-18 | SVE-18 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | 3.91 | | | 0.516 | J | | 0.383 | J | | 0.197 | J | | 0.196 | J | | < 1.2 | U | | < 1.2 | U | |
| SVE-19 | SVE-19 (15-17.5)091511 | 15 - 17.5 ft | 9/15/2011 | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | |
| SVE-20 | SVE20 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.0055 | U | | < 0.0055 | U | | 0.0015 | J | | < 0.0022 | U | | 0.0016 | J | | < 0.0055 | U | | 0.00088 | J | |
| SVE-21 | SVE-21(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | |
| SVE-22 | SVE-22(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0062 | U | | < 0.0062 | U | | < 0.0062 | U | | < 0.0025 | U | | < 0.0062 | U | | < 0.0062 | U | | < 0.0062 | U | |
| SVE-23 | SVE-23(24-26)-090811 | 24 - 26 ft | 9/8/2011 | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | |
| SVE-24 | SVE-24(30-34)-090711 | 30 - 34 ft | 9/7/2011 | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | | < 1.2 | U | | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | |
| SVE-26 | SVE-26(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 1 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | |
| SVE-27 | SVE-27(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| SVE-28 | SVE28 (10-12.5)092111 | 10 - 12.5 ft | 9/21/2011 | < 0.0083 | U | | < 0.0083 | U | | 0.00093 | J | | < 0.0033 | U | | < 0.0083 | U | | < 0.0083 | U | | < 0.0083 | U | |
| | SVE28 (32-34)92011 | 32 - 34 ft | 9/20/2011 | < 0.0054 | U | | < 0.0054 | U | | 0.00064 | J | | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| SVE-29 | SVE29 (1-2)91911 | 1 - 2 ft | 9/19/2011 | < 0.0056 | U | | < 0.0056 | U | | 0.001 | J | | 0.0028 | | | 0.001 | J | | < 0.0056 | U | | < 0.0056 | U | |
| | SVE29 (25-27.5)092111 | 25 - 27.5 | 9/21/2011 | < 0.91 | U | | < 0.91 | U | | < 0.91 | U | | < 0.37 | U | | < 0.91 | U | | < 0.91 | U | | < 0.91 | U | |
| | SVE29 (25-27.5)092111-DUP | 25 - 27.5 | 9/21/2011 | < 0.8 | U | | < 0.8 | U | | < 0.8 | U | | < 0.32 | U | | < 0.8 | U | | < 0.8 | U | | < 0.8 | U | |
| SVE-30 | SVE30 (25-27.5)092111 | 25 - 27.5 ft | 9/21/2011 | < 1 | U | | < 1 | U | | 0.267 | J | | 0.306 | J | | 0.0687 | J | | < 1 | U | | < 1 | U | |
| | SVE30 (3-4)092111 | 3 - 4 ft | 9/21/2011 | 12.7 | | | 9.17 | | | 12.4 | | | < 2.7 | U | | 1.57 | J | | < 6.8 | U | | < 6.8 | U | |
| SVE-31 | SVE31 (20-22.5)092111 | 20 - 22.5 ft | 9/21/2011 | 53.8 | | | 42.3 | | | 111 | | | 535 | | | 8.44 | J | | < 15 | U | | < 15 | U | |
| SVE-32 | SVE32 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.94 | U | | < 0.94 | U | | 0.457 | J | | < 0.38 | U | | < 0.94 | U | | < 0.94 | U | | < 0.94 | U | |
| SVE-33 | SVE33 (27.5-30)092211 | 27.5 - 30 ft | 9/22/2011 | < 0.0055 | U | | < 0.0055 | U | | 0.0014 | J | | 0.0017 | J | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | |
| SVE-34 | SVE 34 (32-34) 092311 | 32 - 34 ft | 9/23/2011 | 5.03 | | | 2.62 | | | 3.91 | | | 4.45 | | | 0.819 | | | < 0.6 | U | | < 0.6 | U | |
| SVE-35 | SVE-3 (38-40) 092311 | 38 - 40 ft | 9/23/2011 | < 0.62 | U | | < 0.62 | U | | < 0.62 | U | | < 0.25 | U | | < 0.62 | U | | < 0.62 | U | | < 0.62 | U | |
| | SVE-35 (16-18) 092311 | 16 - 18 ft | 9/23/2011 | < 0.61 | U | | 0.164 | J | | 0.3 | J | | 0.0605 | J | | 0.155 | J | | < 0.61 | U | | < 0.61 | U | |
| SVE-36 | SVE-36 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | |
| | SVE-36-2 (10-12.5) 092311 | 10 - 12.5 ft | 9/23/2011 | < 0.6 | U | | < 0.6 | U | | 0.102 | J | | < 0.24 | U | | 0.0644 | J | | < 0.6 | U | | < 0.6 | U | |
| VMP-33 | VMP33 (10-12.5)92011 | 10 - 12.5 ft | 9/20/2011 | < 0.0065 | U | | < 0.0065 | U | | < 0.0065 | U | | < 0.0026 | U | | < 0.0065 | U | | < 0.0065 | U | | < 0.0065 | U | |
| | VMP33 (20-22.5)92011 | 20 - 22.5 ft | 9/20/2011 | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0053 | U | | < 0.0053 | U | | < 0.0053 | U | |
| | VMP33 (30-31.5)92011 | 30 - 31.5 ft | 9/20/2011 | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | |
| VMP-34 | VMP34 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 0.0061 | U | | < 0.0061 | U | | 0.0016 | J | | 0.0012 | J | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | |
| | VMP34 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.0051 | U | | 0.0118 | | J | 0.0072 | | J | 0.0017 | J | J | 0.003 | J | J | < 0.0051 | U | | < 0.0051 | U | |
| | VMP34 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | |
| VMP-35 | VMP35 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 1.3 | U | | 1.63 | | | 2.11 | | | < 0.52 | U | | 0.94 | J | | < 1.3 | U | | < 1.3 | U | |
| | VMP35 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.0059 | U | | 0.0125 | | | 0.0053 | J | | 0.0048 | | | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | |
| | VMP35 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.6 | U | | < 0.6 | U | | 0.0509 | J | | < 0.24 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | |
| | VMP35 (8-9)91911 | 8 - 9 ft | 9/19/2011 | 23.1 | | | 13 | | | 26 | | | 110 | | | 2.5 | J | | < 6.2 | U | | < 6.2 | U | |

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | Tetrachloroethene | | | Toluene | | | trans-1,2-Dichloroethene | | | trans-1,3-Dichloropropene | | | Trichloroethene | | | Trichlorofluoromethane | | | Vinyl acetate | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| MW-14 | P-130(40-42) 102411 | 40 - 42 ft | 10/24/2011 | < 0.0026 | U | | 0.006 | J | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0064 | U | UJ |
| SVE-5 | SVE5 (15-17.5)92011 | 15 - 17.5 ft | 9/20/2011 | < 0.0024 | U | | 0.0077 | | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0061 | U | |
| SVE-6 | SUZ-06 (16-18) 101311 | 16 - 18 ft | 10/13/2011 | < 0.0023 | U | | 0.0058 | | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | |
| | SUZ-06 (16-18) 10311-DUP | 16 - 18 ft | 10/13/2011 | < 0.0021 | U | | 0.0055 | | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | |
| SVE-7 | SVE7 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.0025 | U | | 0.0285 | | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0061 | U | |
| SVE-7 | SVE7 (12.5-15)092111-DUP | 12.5 - 15 ft | 9/21/2011 | < 0.0022 | U | | 0.0072 | | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | |
| SVE-8 | SVE8 (15-17.5)092111 | 15 - 17.5 ft | 9/21/2011 | < 0.0022 | U | | 0.0289 | | J | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| | SVE-8 (9-10)091611 | 9 - 10 ft | 9/16/2011 | < 0.56 | U | | < 1.4 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | | < 1.4 | U | |
| | SVE-8 (9-10)091611-DUP | 9 - 10 ft | 9/16/2011 | < 0.6 | U | | < 1.5 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 1.5 | U | |
| SVE-9 | SVE9 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.32 | U | | < 0.79 | U | | < 0.32 | U | | < 0.32 | U | | < 0.32 | U | | < 0.32 | U | | < 0.79 | U | |
| SVE-10 | SVE10 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 1.4 | U | | < 3.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 3.4 | U | |
| | SVE10 (17.5-20)092211-DUP | 17.5 - 20 ft | 9/22/2011 | < 5 | U | | 1.19 | J | | < 5 | U | | < 5 | U | | < 5 | U | | < 5 | U | | < 12 | U | |
| SVE-11 | SVE11 (12.5-15)092211 | 12.5 - 15 ft | 9/22/2011 | < 3.1 | U | | 0.703 | J | | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | | < 7.9 | U | |
| | SVE11 (9-10')91911 | 9 - 10 ft | 9/19/2011 | < 0.57 | U | | 0.0952 | J | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | | < 1.4 | U | |
| SVE-12 | SVE12 (15-17.5)092211 | 15 - 17.5 ft | 9/22/2011 | < 6 | U | | 311 | | | < 6 | U | | < 6 | U | | < 6 | U | | < 6 | U | | < 15 | U | |
| SVE-13 | SVE13 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 0.29 | U | | < 0.72 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.72 | U | |
| SVE-14 | SVE14 (12.5-15)91511 | 12.5 - 15 ft | 9/15/2011 | < 2.5 | U | | < 6.2 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 6.2 | U | |
| SVE-15 | SVE15 (17.5-20)091411 | 17.5 - 20 ft | 9/14/2011 | < 0.12 | U | | < 0.3 | U | | < 0.12 | U | | < 0.12 | U | | < 0.12 | U | | < 0.12 | U | | < 0.3 | U | UJ |
| SVE-16 | SVE16 (15-17.5)091311 | 15 - 17.5 ft | 9/13/2011 | < 0.33 | U | | < 0.83 | U | | < 0.33 | U | | < 0.33 | U | | < 0.33 | U | | < 0.33 | U | | < 0.83 | U | UJ |
| SVE-17 | SVE17 (17.5-20)91511 | 17.5 - 20 ft | 9/15/2011 | < 0.0023 | U | | 0.0051 | J | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | |
| SVE-18 | SVE-18 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 0.46 | U | | 0.0817 | J | | < 0.46 | U | | < 0.46 | U | | < 0.46 | U | | < 0.46 | U | | < 1.2 | U | |
| SVE-19 | SVE-19 (15-17.5)091511 | 15 - 17.5 ft | 9/15/2011 | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | |
| SVE-20 | SVE20 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.0022 | U | | 0.0026 | J | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| SVE-21 | SVE-21(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0022 | U | | 0.0024 | J | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| SVE-22 | SVE-22(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0025 | U | | 0.0032 | J | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0062 | U | |
| SVE-23 | SVE-23(24-26)-090811 | 24 - 26 ft | 9/8/2011 | < 0.0021 | U | | < 0.0053 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | |
| SVE-24 | SVE-24(30-34)-090711 | 30 - 34 ft | 9/7/2011 | < 1.2 | U | | < 3.1 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 3.1 | U | |
| SVE-26 | SVE-26(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 1 | U | | < 2.5 | U | | < 1 | U | | < 1 | U | | < 1 | U | | < 1 | U | | < 2.5 | U | |
| SVE-27 | SVE-27(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 0.0022 | U | | 0.0019 | J | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | |
| SVE-28 | SVE28 (10-12.5)092111 | 10 - 12.5 ft | 9/21/2011 | < 0.0033 | U | | 0.0085 | | | < 0.0033 | U | | < 0.0033 | U | | < 0.0033 | U | | < 0.0033 | U | | < 0.0083 | U | |
| | SVE28 (32-34)92011 | 32 - 34 ft | 9/20/2011 | < 0.0022 | U | | 0.0061 | | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | |
| SVE-29 | SVE29 (1-2)91911 | 1 - 2 ft | 9/19/2011 | < 0.0022 | U | | 0.0535 | | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | |
| | SVE29 (25-27.5)092111 | 25 - 27.5 | 9/21/2011 | < 0.37 | U | | < 0.91 | U | | < 0.37 | U | | < 0.37 | U | | < 0.37 | U | | < 0.37 | U | | < 0.91 | U | |
| | SVE29 (25-27.5)092111-DUP | 25 - 27.5 | 9/21/2011 | < 0.32 | U | | < 0.8 | U | | < 0.32 | U | | < 0.32 | U | | < 0.32 | U | | < 0.32 | U | | < 0.8 | U | |
| SVE-30 | SVE30 (25-27.5)092111 | 25 - 27.5 ft | 9/21/2011 | < 0.41 | U | | 0.113 | J | | < 0.41 | U | | < 0.41 | U | | < 0.41 | U | | < 0.41 | U | | < 1 | U | |
| | SVE30 (3-4)092111 | 3 - 4 ft | 9/21/2011 | < 2.7 | U | | < 6.8 | U | | < 2.7 | U | | < 2.7 | U | | < 2.7 | U | | < 2.7 | U | | < 6.8 | U | |
| SVE-31 | SVE31 (20-22.5)092111 | 20 - 22.5 ft | 9/21/2011 | < 6 | U | | 945 | | | < 6 | U | | < 6 | U | | < 6 | U | | < 6 | U | | < 15 | U | |
| SVE-32 | SVE32 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.38 | U | | < 0.94 | U | | < 0.38 | U | | < 0.38 | U | | < 0.38 | U | | < 0.38 | U | | < 0.94 | U | |
| SVE-33 | SVE33 (27.5-30)092211 | 27.5 - 30 ft | 9/22/2011 | < 0.0022 | U | | 0.0089 | | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| SVE-34 | SVE 34 (32-34) 092311 | 32 - 34 ft | 9/23/2011 | < 0.24 | U | | 2.03 | | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.6 | U | |
| SVE-35 | SVE-3 (38-40) 092311 | 38 - 40 ft | 9/23/2011 | < 0.25 | U | | < 0.62 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.62 | U | |
| | SVE-35 (16-18) 092311 | 16 - 18 ft | 9/23/2011 | < 0.25 | U | | < 0.61 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.61 | U | |
| SVE-36 | SVE-36 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 0.0023 | U | | 0.0032 | J | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | |
| | SVE-36-2 (10-12.5) 092311 | 10 - 12.5 ft | 9/23/2011 | < 0.24 | U | | < 0.6 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.6 | U | |
| VMP-33 | VMP33 (10-12.5)92011 | 10 - 12.5 ft | 9/20/2011 | < 0.0026 | U | | 0.0067 | | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0065 | U | |
| | VMP33 (20-22.5)92011 | 20 - 22.5 ft | 9/20/2011 | < 0.0021 | U | | 0.0042 | J | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0053 | U | |
| | VMP33 (30-31.5)92011 | 30 - 31.5 ft | 9/20/2011 | < 0.0023 | U | | 0.0062 | | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | |
| VMP-34 | VMP34 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 0.0024 | U | | 0.0106 | | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0061 | U | |
| | VMP34 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.002 | U | | 0.0121 | | J | < 0.002 | U | | < 0.002 | U | | < 0.002 | U | | < 0.002 | U | | < 0.0051 | U | |
| | VMP34 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0023 | U | | 0.0065 | | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | |
| VMP-35 | VMP35 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 0.52 | U | | 0.24 | J | | < 0.52 | U | | < 0.52 | U | | < 0.52 | U | | < 0.52 | U | | < 1.3 | U | |
| | VMP35 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.0024 | U | | 0.0035 | J | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0059 | U | |
| | VMP35 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.24 | U | | < 0.6 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.6 | U | |
| | VMP35 (8-9)91911 | 8 - 9 ft | 9/19/2011 | < 2.5 | U | | 82.9 | | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 6.2 | U | |

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | Vinyl chloride | | | Xylenes (total) | | | TPH (>C28-C40) | | | TPH (C10-C28) | | | TPH-GRO (VOA) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| MW-14 | P-130(40-42) 102411 | 40 - 42 ft | 10/24/2011 | < 0.0026 | U | | 0.0024 | | J | < 19 | U | | < 19 | U | | < 16 | U | |
| SVE-5 | SVE5 (15-17.5)92011 | 15 - 17.5 ft | 9/20/2011 | < 0.0024 | U | | < 0.0024 | | U | < 18 | U | | < 18 | U | | < 32 | U | |
| SVE-6 | SUZ-06 (16-18) 101311 | 16 - 18 ft | 10/13/2011 | < 0.0023 | U | | 0.0036 | | | < 18 | U | | < 18 | U | | 16 | J | |
| | SUZ-06 (16-18) 10311-DUP | 16 - 18 ft | 10/13/2011 | < 0.0021 | U | | 0.0036 | | | < 18 | U | | < 18 | U | | < 15 | U | |
| SVE-7 | SVE7 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.0025 | U | | 0.0205 | J | | < 18 | U | | < 18 | U | | 8.45 | J | |
| SVE-7 | SVE7 (12.5-15)092111-DUP | 12.5 - 15 ft | 9/21/2011 | < 0.0022 | U | UJ | < 0.0022 | UJ | U | < 18 | U | | < 18 | U | | 14.3 | J | |
| SVE-8 | SVE8 (15-17.5)092111 | 15 - 17.5 ft | 9/21/2011 | < 0.0022 | U | | 0.0253 | J | | < 17 | U | | 516 | | | 13 | | |
| | SVE-8 (9-10)091611 | 9 - 10 ft | 9/16/2011 | < 0.56 | U | | < 0.56 | | U | < 18 | U | | 1030 | | | 1090 | | |
| | SVE-8 (9-10)091611-DUP | 9 - 10 ft | 9/16/2011 | < 0.6 | U | | < 0.6 | | U | < 18 | U | | 1030 | | | 918 | | |
| SVE-9 | SVE9 (12.5-15)092111 | 12.5 - 15 ft | 9/21/2011 | < 0.32 | U | | < 0.32 | | U | < 22 | U | | 25.7 | | | 458 | | |
| SVE-10 | SVE10 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 1.4 | U | | 31.7 | J | | < 17 | U | | 222 | | | 545 | | J |
| | SVE10 (17.5-20)092211-DUP | 17.5 - 20 ft | 9/22/2011 | < 5 | U | | 192 | J | | < 17 | U | | 220 | | | 1380 | | J |
| SVE-11 | SVE11 (12.5-15)092211 | 12.5 - 15 ft | 9/22/2011 | < 3.1 | U | | 69.8 | | | 53.8 | | | 1390 | | | 2670 | | |
| | SVE11 (9-10')91911 | 9 - 10 ft | 9/19/2011 | < 0.57 | U | UJ | 0.98 | | | 41.1 | | | 208 | | | 1080 | | |
| SVE-12 | SVE12 (15-17.5)092211 | 15 - 17.5 ft | 9/22/2011 | < 6 | U | | 266 | | | 172 | | | 6310 | | | 7900 | | |
| SVE-13 | SVE13 (17.5-20)092211 | 17.5 - 20 ft | 9/22/2011 | < 0.29 | U | | 1.92 | | | < 17 | U | | 156 | | | 126 | | |
| SVE-14 | SVE14 (12.5-15)91511 | 12.5 - 15 ft | 9/15/2011 | < 2.5 | U | UJ | < 2.5 | | U | 191 | | | 455 | | | 1080 | | |
| SVE-15 | SVE15 (17.5-20)091411 | 17.5 - 20 ft | 9/14/2011 | < 0.12 | U | UJ | < 0.12 | | U | 26.4 | | | 43.2 | | | < 12 | U | |
| SVE-16 | SVE16 (15-17.5)091311 | 15 - 17.5 ft | 9/13/2011 | < 0.33 | U | UJ | < 0.33 | | U | 20.5 | | | 92.9 | | | 87.7 | | |
| SVE-17 | SVE17 (17.5-20)91511 | 17.5 - 20 ft | 9/15/2011 | < 0.0023 | U | | 0.00091 | | J | 17.2 | | | 29.7 | | | 12 | J | |
| SVE-18 | SVE-18 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 0.46 | U | | 2.11 | | | 27.2 | | | 460 | | | 336 | | |
| SVE-19 | SVE-19 (15-17.5)091511 | 15 - 17.5 ft | 9/15/2011 | < 0.0023 | U | | < 0.0023 | | U | < 19 | U | | < 19 | U | | < 12 | U | |
| SVE-20 | SVE20 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.0022 | U | | < 0.0022 | | U | < 17 | U | | 20.6 | | | 23.9 | | |
| SVE-21 | SVE-21(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0022 | U | | < 0.0022 | | U | < 17 | U | | < 17 | U | | < 11 | U | |
| SVE-22 | SVE-22(30-32)-090811 | 30 - 32 ft | 9/8/2011 | < 0.0025 | U | | < 0.0025 | | U | < 18 | U | | < 18 | U | | < 12 | U | |
| SVE-23 | SVE-23(24-26)-090811 | 24 - 26 ft | 9/8/2011 | < 0.0021 | U | | < 0.0021 | | U | < 19 | U | | < 19 | U | | < 13 | U | |
| SVE-24 | SVE-24(30-34)-090711 | 30 - 34 ft | 9/7/2011 | < 1.2 | U | | < 1.2 | | U | < 19 | U | | 49.2 | | | 83.2 | | |
| SVE-26 | SVE-26(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 1 | U | | < 1 | | U | < 19 | U | | < 19 | U | | 19.3 | | |
| SVE-27 | SVE-27(30-32)-090711 | 30 - 32 ft | 9/7/2011 | < 0.0022 | U | | < 0.0022 | | U | < 17 | U | | < 17 | U | | < 9.2 | U | |
| SVE-28 | SVE28 (10-12.5)092111 | 10 - 12.5 ft | 9/21/2011 | < 0.0033 | U | | < 0.0033 | | U | < 18 | U | | < 18 | U | | < 12 | U | |
| | SVE28 (32-34)92011 | 32 - 34 ft | 9/20/2011 | < 0.0022 | U | | < 0.0022 | | U | < 18 | U | | < 18 | U | | < 12 | U | |
| SVE-29 | SVE29 (1-2)91911 | 1 - 2 ft | 9/19/2011 | < 0.0022 | U | | 0.0127 | | | 68.1 | | | 29.3 | | | 107 | | |
| | SVE29 (25-27.5)092111 | 25 - 27.5 | 9/21/2011 | < 0.37 | U | | < 0.37 | | U | 21.8 | | | 954 | | | 53 | | |
| | SVE29 (25-27.5)092111-DUP | 25 - 27.5 | 9/21/2011 | < 0.32 | U | | < 0.32 | | U | 21.3 | | | 960 | | | 108 | | |
| SVE-30 | SVE30 (25-27.5)092111 | 25 - 27.5 ft | 9/21/2011 | < 0.41 | U | | 1.15 | | | < 17 | U | | 16.1 | J | | 61.2 | | |
| | SVE30 (3-4)092111 | 3 - 4 ft | 9/21/2011 | < 2.7 | U | | 62.7 | | | < 100 | U | | 1200 | | | 886 | | |
| SVE-31 | SVE31 (20-22.5)092111 | 20 - 22.5 ft | 9/21/2011 | < 6 | U | | 1810 | | | < 180 | U | | 2030 | | | 11700 | | |
| SVE-32 | SVE32 (25-27.5)092211 | 25 - 27.5 ft | 9/22/2011 | < 0.38 | U | | 0.284 | | J | < 17 | U | | 15.3 | J | | 58.1 | | |
| SVE-33 | SVE33 (27.5-30)092211 | 27.5 - 30 ft | 9/22/2011 | < 0.0022 | U | | 0.005 | | | < 17 | U | | < 17 | U | | 23.1 | | |
| SVE-34 | SVE 34 (32-34) 092311 | 32 - 34 ft | 9/23/2011 | < 0.24 | U | UJ | 42.9 | | | 34.1 | | | 2150 | | | 692 | | |
| SVE-35 | SVE-3 (38-40) 092311 | 38 - 40 ft | 9/23/2011 | < 0.25 | U | UJ | < 0.25 | | U | < 19 | U | | < 19 | U | | < 13 | U | |
| | SVE-35 (16-18) 092311 | 16 - 18 ft | 9/23/2011 | < 0.25 | U | UJ | 0.463 | | | 113 | | | 143 | | | 288 | | |
| SVE-36 | SVE-36 (17.5-20)091511 | 17.5 - 20 ft | 9/15/2011 | < 0.0023 | U | | < 0.0023 | | U | < 17 | U | | < 17 | U | | 21.7 | | |
| | SVE-36-2 (10-12.5) 092311 | 10 - 12.5 ft | 9/23/2011 | < 0.24 | U | UJ | < 0.24 | | U | 47.6 | | | 86.4 | | | 11.3 | J | |
| VMP-33 | VMP33 (10-12.5)92011 | 10 - 12.5 ft | 9/20/2011 | < 0.0026 | U | | < 0.0026 | | U | 15.2 | J | | < 20 | U | | < 51 | U | |
| | VMP33 (20-22.5)92011 | 20 - 22.5 ft | 9/20/2011 | < 0.0021 | U | | < 0.0021 | | U | < 18 | U | | < 18 | U | | < 46 | U | |
| | VMP33 (30-31.5)92011 | 30 - 31.5 ft | 9/20/2011 | < 0.0023 | U | | < 0.0023 | | U | < 18 | U | | < 18 | U | | < 40 | U | |
| VMP-34 | VMP34 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 0.0024 | U | | 0.0042 | | | < 18 | U | | < 18 | U | | 2.68 | J | |
| | VMP34 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.002 | U | | 0.0068 | J | | < 19 | U | | < 19 | U | | < 13 | U | |
| | VMP34 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0023 | U | | 0.0018 | | J | < 17 | U | | < 17 | U | | < 14 | U | |
| VMP-35 | VMP35 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 0.52 | U | | 0.785 | | | < 19 | U | | 619 | | | 909 | | |
| | VMP35 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 0.0024 | U | | 0.0381 | | | < 18 | U | | 33.6 | | | 4.74 | J | |
| | VMP35 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.24 | U | | 0.112 | | J | < 17 | U | | < 17 | U | | 12.4 | | |
| | VMP35 (8-9)91911 | 8 - 9 ft | 9/19/2011 | < 2.5 | U | UJ | 366 | | | 21.2 | | | 382 | | | 3190 | | |

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | 1,1,1,2-Tetrachloroethane | | | 1,1,1-Trichloroethane (Methyl chloroform) | | | 1,1,2,2-Tetrachloroethane | | | 1,1,2-Trichloroethane | | | 1,1-Dichloroethane | | | 1,1-Dichloroethene | | | 1,1-Dichloropropene | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| VMP-36 | VMP36 (10-11)092211 | 10 - 11 ft | 9/22/2011 | < 1.6 | U | | < 0.63 | U | | < 0.63 | U | | < 0.63 | U | | < 0.63 | U | | < 0.63 | U | | < 1.6 | U | |
| | VMP36 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 3.1 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 3.1 | U | |
| | VMP36 (10-12.5)092711-DUP | 10 - 12.5 ft | 9/27/2011 | < 1.4 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | | < 1.4 | U | |
| | VMP36 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 2.9 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 2.9 | U | |
| | VMP36 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | |
| VMP-37 | VMP37 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 140 | U | | < 55 | U | | < 55 | U | | < 55 | U | | < 55 | U | | < 55 | U | | < 140 | U | |
| | VMP37 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 25 | U | | < 10 | U | | < 10 | U | | < 10 | U | | < 10 | U | | < 10 | U | | < 25 | U | |
| | VMP37 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.6 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.6 | U | |
| | VMP37 (6-7)092111 | 6 - 7 ft | 9/21/2011 | < 8.4 | U | | < 3.4 | U | | < 3.4 | U | | < 3.4 | U | | < 3.4 | U | | < 3.4 | U | | < 8.4 | U | |
| VMP-38 | VMP38 (10-12.5)091311 | 10 - 12.5 ft | 9/13/2011 | < 0.61 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.61 | U | |
| | VMP38 (20-22.5)091311 | 20 - 22.5 ft | 9/13/2011 | < 4.8 | U | | < 1.9 | U | | < 1.9 | U | | < 1.9 | U | | < 1.9 | U | | < 1.9 | U | | < 4.8 | U | |
| | VMP38 (27-28)091311 | 27 - 28 ft | 9/13/2011 | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | |
| | VMP38 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 1.6 | U | | < 0.64 | U | | < 0.64 | U | | < 0.64 | U | | < 0.64 | U | | < 0.64 | U | | < 1.6 | U | |
| VMP-39 | VMP39 (10-12.5)91511 | 10 - 12.5 ft | 9/15/2011 | < 6.3 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 6.3 | U | |
| | VMP39 (20-22.5)91511 | 20 - 22.5 ft | 9/15/2011 | < 0.54 | U | | < 0.22 | U | | < 0.22 | U | | < 0.22 | U | | < 0.22 | U | | < 0.22 | U | | < 0.54 | U | |
| | VMP39 (20-22.5)91511-DUP | 20 - 22.5 ft | 9/15/2011 | < 0.62 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.62 | U | |
| | VMP39 (30-31)91511 | 30 - 31 ft | 9/15/2011 | < 3 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 3 | U | |
| | VMP39 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 2.2 | U | | < 0.89 | U | | < 0.89 | U | | < 0.89 | U | | < 0.89 | U | | < 0.89 | U | | < 2.2 | U | |
| VMP-40 | VMP40 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 2.5 | U | | < 1 | U | | < 1 | U | | < 1 | U | | < 1 | U | | < 1 | U | | < 2.5 | U | |
| | VMP40 (10-12.5)092611-DUP | 10 - 12.5 ft | 9/26/2011 | < 1.2 | U | | < 0.48 | U | | < 0.48 | U | | < 0.48 | U | | < 0.48 | U | | < 0.48 | U | | < 1.2 | U | |
| | VMP40 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | |
| | VMP40 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | |
| VMP-41 | VMP-41 (25-27)090911 | 25 - 27 ft | 9/9/2011 | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | |
| | VMP-41(10-12.5)-090811 | 10 - 12.5 ft | 9/8/2011 | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | |
| | VMP-41(20-22.5)-090811 | 20 - 22.5 ft | 9/8/2011 | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | |
| VMP-42 | VMP42 (10-12.5)91211 | 10 - 12.5 ft | 9/12/2011 | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| | VMP42 (20-22.5)91211 | 20 - 22.5 ft | 9/12/2011 | < 0.0094 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0094 | U | |
| | VMP42 (30-31.5)91211 | 30 - 31.5 ft | 9/12/2011 | < 0.0059 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0059 | U | |
| | VMP-42(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0066 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0066 | U | |
| VMP-43 | VMP-43 (10-12.5)090911 | 10 - 12.5 ft | 9/9/2011 | < 0.006 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.006 | U | |
| | VMP-43 (20-22.5)090911 | 20 - 22.5 ft | 9/9/2011 | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| | VMP-43 (30-31.5)090911 | 30 - 31.5 ft | 9/9/2011 | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | |
| | VMP-43(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | |
| VMP-44 | VMP-44 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.0069 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0069 | U | |
| | VMP-44 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.007 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.007 | U | |
| | VMP-44 (9-10)102111 | 9 - 10 ft | 10/21/2011 | < 2.9 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 2.9 | U | |
| VMP-45 | VMP-45 (10-11)110111 | 10 - 11 ft | 11/1/2011 | < 0.0064 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0064 | U | |
| | VMP-45 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.0076 | U | | < 0.003 | U | | < 0.003 | U | | < 0.003 | U | | < 0.003 | U | | < 0.003 | U | | < 0.0076 | U | |
| | VMP-45 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.86 | U | | < 0.35 | U | | < 0.35 | U | | < 0.35 | U | | < 0.35 | U | | < 0.35 | U | | < 0.86 | U | |
| | VMP-45 (30-31)110111-DUP | 30 - 31 ft | 11/1/2011 | < 0.0077 | U | | < 0.0031 | U | | < 0.0031 | U | | < 0.0031 | U | | < 0.0031 | U | | < 0.0031 | U | | < 0.0077 | U | |
| VMP-46 | VMP 46 (10-11) 092311 | 10 - 11 ft | 9/23/2011 | < 0.0065 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0065 | U | |
| | VMP46 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 0.0069 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0069 | U | |
| | VMP46 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | |
| | VMP46 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0064 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0064 | U | |

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | 1,2,3-Trichlorobenzene | | | 1,2,3-Trichloropropane | | | 1,2,4-Trichlorobenzene | | | 1,2,4-Trimethylbenzene | | | 1,2-Dibromo-3-chloropropane (DBCP) | | | 1,2-Dibromoethane | | | 1,2-Dichlorobenzene | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| VMP-36 | VMP36 (10-11)092211 | 10 - 11 ft | 9/22/2011 | < 1.6 | U | | < 1.6 | U | | < 1.6 | U | | 0.936 | J | | < 1.6 | U | | < 0.63 | U | | < 0.63 | U | |
| | VMP36 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | | < 1.2 | U | | < 1.2 | U | |
| | VMP36 (10-12.5)092711-DUP | 10 - 12.5 ft | 9/27/2011 | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 0.56 | U | | < 0.56 | U | |
| | VMP36 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 2.9 | U | | < 2.9 | U | | < 2.9 | U | | 1.02 | J | | < 2.9 | U | | < 1.2 | U | | < 1.2 | U | |
| | VMP36 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | 0.0055 | J | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | |
| VMP-37 | VMP37 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 140 | U | | < 140 | U | | < 140 | U | | 254 | | | < 140 | U | | < 55 | U | | < 55 | U | |
| | VMP37 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 25 | U | | < 25 | U | | < 25 | U | | 1.88 | J | | < 25 | U | | < 10 | U | | < 10 | U | |
| | VMP37 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | 8.57 | | | < 0.6 | U | | < 0.24 | U | | < 0.24 | U | |
| | VMP37 (6-7)092111 | 6 - 7 ft | 9/21/2011 | < 8.4 | U | | < 8.4 | U | | < 8.4 | U | | 139 | | | < 8.4 | U | | < 3.4 | U | | < 3.4 | U | |
| VMP-38 | VMP38 (10-12.5)091311 | 10 - 12.5 ft | 9/13/2011 | < 0.61 | U | | < 0.61 | U | | < 0.61 | U | | < 0.61 | U | | < 0.61 | U | | < 0.24 | U | | < 0.24 | U | |
| | VMP38 (20-22.5)091311 | 20 - 22.5 ft | 9/13/2011 | < 4.8 | U | | < 4.8 | U | | < 4.8 | U | | 77.1 | | | < 4.8 | U | | < 1.9 | U | | < 1.9 | U | |
| | VMP38 (27-28)091311 | 27 - 28 ft | 9/13/2011 | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | 0.007 | | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | VMP38 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 1.6 | U | | < 1.6 | U | | < 1.6 | U | | < 1.6 | U | | < 1.6 | U | | < 0.64 | U | | < 0.64 | U | |
| VMP-39 | VMP39 (10-12.5)91511 | 10 - 12.5 ft | 9/15/2011 | < 6.3 | U | | < 6.3 | U | | < 6.3 | U | | 54.6 | | | < 6.3 | U | | < 2.5 | U | | < 2.5 | U | |
| | VMP39 (20-22.5)91511 | 20 - 22.5 ft | 9/15/2011 | < 0.54 | U | | < 0.54 | U | | < 0.54 | U | | 1.11 | | | < 0.54 | U | | < 0.22 | U | | < 0.22 | U | |
| | VMP39 (20-22.5)91511-DUP | 20 - 22.5 ft | 9/15/2011 | < 0.62 | U | | < 0.62 | U | | < 0.62 | U | | 3.79 | | | < 0.62 | U | | < 0.25 | U | | < 0.25 | U | |
| | VMP39 (30-31)91511 | 30 - 31 ft | 9/15/2011 | < 3 | U | | < 3 | U | | < 3 | U | | 40.8 | | | < 3 | U | | < 1.2 | U | | < 1.2 | U | |
| | VMP39 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 2.2 | U | | < 2.2 | U | | < 2.2 | U | | 11.1 | | | < 2.2 | U | | < 0.89 | U | | < 0.89 | U | |
| VMP-40 | VMP40 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | 0.322 | J | | < 2.5 | U | | < 1 | U | | < 1 | U | |
| | VMP40 (10-12.5)092611-DUP | 10 - 12.5 ft | 9/26/2011 | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 0.48 | U | | < 0.48 | U | |
| | VMP40 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | 0.0019 | J | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | VMP40 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | |
| VMP-41 | VMP-41 (25-27)090911 | 25 - 27 ft | 9/9/2011 | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | |
| | VMP-41(10-12.5)-090811 | 10 - 12.5 ft | 9/8/2011 | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | VMP-41(20-22.5)-090811 | 20 - 22.5 ft | 9/8/2011 | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | |
| VMP-42 | VMP42 (10-12.5)91211 | 10 - 12.5 ft | 9/12/2011 | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | 0.0009 | J | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | VMP42 (20-22.5)91211 | 20 - 22.5 ft | 9/12/2011 | < 0.0094 | U | | < 0.0094 | U | | < 0.0094 | U | | < 0.0094 | U | | < 0.0094 | U | | < 0.0038 | U | | < 0.0038 | U | |
| | VMP42 (30-31.5)91211 | 30 - 31.5 ft | 9/12/2011 | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0024 | U | | < 0.0024 | U | |
| | VMP-42(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0026 | U | | < 0.0026 | U | |
| VMP-43 | VMP-43 (10-12.5)090911 | 10 - 12.5 ft | 9/9/2011 | < 0.006 | U | | < 0.006 | U | | < 0.006 | U | | 0.0086 | | | < 0.006 | U | | < 0.0024 | U | | < 0.0024 | U | |
| | VMP-43 (20-22.5)090911 | 20 - 22.5 ft | 9/9/2011 | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | 0.0108 | | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | VMP-43 (30-31.5)090911 | 30 - 31.5 ft | 9/9/2011 | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | 0.0063 | | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | |
| | VMP-43(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | 0.0307 | | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | |
| VMP-44 | VMP-44 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.0069 | U | | < 0.0069 | U | | < 0.0069 | U | | 0.0024 | J | | < 0.0069 | U | | < 0.0028 | U | | < 0.0028 | U | |
| | VMP-44 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | | 0.0011 | J | | < 0.007 | U | | < 0.0028 | U | | < 0.0028 | U | |
| | VMP-44 (9-10)102111 | 9 - 10 ft | 10/21/2011 | 3.02 | | | < 2.9 | U | | < 2.9 | U | | 24.2 | | | < 2.9 | U | | < 1.2 | U | | < 1.2 | U | |
| VMP-45 | VMP-45 (10-11)110111 | 10 - 11 ft | 11/1/2011 | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0025 | U | | < 0.0025 | U | |
| | VMP-45 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.0076 | U | | < 0.0076 | U | | < 0.0076 | U | | < 0.0076 | U | | < 0.0076 | U | | < 0.003 | U | | < 0.003 | U | |
| | VMP-45 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.86 | U | | < 0.86 | U | | < 0.86 | U | | 0.44 | J | | < 0.86 | U | | < 0.35 | U | | < 0.35 | U | |
| | VMP-45 (30-31)110111-DUP | 30 - 31 ft | 11/1/2011 | < 0.0077 | U | | < 0.0077 | U | | < 0.0077 | U | | 0.0031 | J | | < 0.0077 | U | | < 0.0031 | U | | < 0.0031 | U | |
| VMP-46 | VMP 46 (10-11) 092311 | 10 - 11 ft | 9/23/2011 | < 0.0065 | U | | < 0.0065 | U | | < 0.0065 | U | | 0.0031 | J | J | < 0.0065 | U | | < 0.0026 | U | | < 0.0026 | U | |
| | VMP46 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 0.0069 | U | | < 0.0069 | U | | < 0.0069 | U | | 0.0033 | J | J | < 0.0069 | U | | < 0.0028 | U | | < 0.0028 | U | |
| | VMP46 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | 0.0044 | J | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | VMP46 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | 0.045 | | J | < 0.0064 | U | | < 0.0026 | U | | < 0.0026 | U | |

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | 1,2-Dichloroethane | | | 1,2-Dichloropropane | | | 1,3,5-Trimethylbenzene | | | 1,3-Dichlorobenzene | | | 1,3-Dichloropropane | | | 1,4-Dichlorobenzene | | | 1,4-Dioxane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| VMP-36 | VMP36 (10-11)092211 | 10 - 11 ft | 9/22/2011 | < 0.63 | U | | < 0.63 | U | | 0.28 | J | | < 0.63 | U | | < 1.6 | U | | < 0.63 | U | | < 7.9 | U | |
| | VMP36 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 1.2 | U | | < 1.2 | U | | < 3.1 | U | | < 1.2 | U | | < 3.1 | U | | < 1.2 | U | | < 15 | U | |
| | VMP36 (10-12.5)092711-DUP | 10 - 12.5 ft | 9/27/2011 | < 0.56 | U | | < 0.56 | U | | 0.466 | J | | < 0.56 | U | | < 1.4 | U | | < 0.56 | U | | < 7 | U | |
| | VMP36 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 1.2 | U | | < 1.2 | U | | < 2.9 | U | | < 1.2 | U | | < 2.9 | U | | < 1.2 | U | | < 14 | U | |
| | VMP36 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0023 | U | | < 0.0023 | U | | 0.0016 | J | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.029 | U | |
| VMP-37 | VMP37 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 55 | U | | < 55 | U | | 68.9 | J | | < 55 | U | | < 140 | U | | < 55 | U | | < 690 | U | |
| | VMP37 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 10 | U | | < 10 | U | | 1.93 | J | | < 10 | U | | < 25 | U | | < 10 | U | | < 130 | U | |
| | VMP37 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.24 | U | | < 0.24 | U | | 1.71 | | | < 0.24 | U | | < 0.6 | U | | < 0.24 | U | | < 3 | U | |
| | VMP37 (6-7)092111 | 6 - 7 ft | 9/21/2011 | < 3.4 | U | | < 3.4 | U | | 36.5 | | | < 3.4 | U | | < 8.4 | U | | < 3.4 | U | | < 42 | U | |
| VMP-38 | VMP38 (10-12.5)091311 | 10 - 12.5 ft | 9/13/2011 | < 0.24 | U | | < 0.24 | U | | < 0.61 | U | | < 0.24 | U | | < 0.61 | U | | < 0.24 | U | | < 3 | U | |
| | VMP38 (20-22.5)091311 | 20 - 22.5 ft | 9/13/2011 | < 1.9 | U | | < 1.9 | U | | 16.7 | | | < 1.9 | U | | < 4.8 | U | | < 1.9 | U | | < 24 | U | |
| | VMP38 (27-28)091311 | 27 - 28 ft | 9/13/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.027 | U | |
| | VMP38 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 0.64 | U | | < 0.64 | U | | < 1.6 | U | | < 0.64 | U | | < 1.6 | U | | < 0.64 | U | | < 8 | U | |
| VMP-39 | VMP39 (10-12.5)91511 | 10 - 12.5 ft | 9/15/2011 | < 2.5 | U | | < 2.5 | U | | 8.48 | | | < 2.5 | U | | < 6.3 | U | | < 2.5 | U | | < 31 | U | |
| | VMP39 (20-22.5)91511 | 20 - 22.5 ft | 9/15/2011 | < 0.22 | U | | < 0.22 | U | | 0.225 | J | | < 0.22 | U | | < 0.54 | U | | < 0.22 | U | | < 2.7 | U | |
| | VMP39 (20-22.5)91511-DUP | 20 - 22.5 ft | 9/15/2011 | < 0.25 | U | | < 0.25 | U | | 0.773 | | | < 0.25 | U | | < 0.62 | U | | < 0.25 | U | | < 3.1 | U | |
| | VMP39 (30-31)91511 | 30 - 31 ft | 9/15/2011 | < 1.2 | U | | < 1.2 | U | | 9.58 | | | < 1.2 | U | | < 3 | U | | < 1.2 | U | | < 15 | U | |
| | VMP39 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 0.89 | U | | < 0.89 | U | | 2.74 | | | < 0.89 | U | | < 2.2 | U | | < 0.89 | U | | < 11 | U | |
| VMP-40 | VMP40 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 1 | U | | < 1 | U | | 0.327 | J | | < 1 | U | | < 2.5 | U | | < 1 | U | | < 13 | U | |
| | VMP40 (10-12.5)092611-DUP | 10 - 12.5 ft | 9/26/2011 | < 0.48 | U | | < 0.48 | U | | 0.196 | J | | < 0.48 | U | | < 1.2 | U | | < 0.48 | U | | < 6 | U | |
| | VMP40 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.027 | U | |
| | VMP40 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.029 | U | |
| VMP-41 | VMP-41 (25-27)090911 | 25 - 27 ft | 9/9/2011 | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.026 | U | |
| | VMP-41(10-12.5)-090811 | 10 - 12.5 ft | 9/8/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.028 | U | |
| | VMP-41(20-22.5)-090811 | 20 - 22.5 ft | 9/8/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.027 | U | |
| VMP-42 | VMP42 (10-12.5)91211 | 10 - 12.5 ft | 9/12/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.028 | U | |
| | VMP42 (20-22.5)91211 | 20 - 22.5 ft | 9/12/2011 | < 0.0038 | U | | < 0.0038 | U | | < 0.0094 | U | | < 0.0038 | U | | < 0.0094 | U | | < 0.0038 | U | | < 0.047 | U | |
| | VMP42 (30-31.5)91211 | 30 - 31.5 ft | 9/12/2011 | < 0.0024 | U | | < 0.0024 | U | | < 0.0059 | U | | < 0.0024 | U | | < 0.0059 | U | | < 0.0024 | U | | < 0.03 | U | |
| | VMP-42(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0026 | U | | < 0.0026 | U | | < 0.0066 | U | | < 0.0026 | U | | < 0.0066 | U | | < 0.0026 | U | | < 0.033 | U | |
| VMP-43 | VMP-43 (10-12.5)090911 | 10 - 12.5 ft | 9/9/2011 | < 0.0024 | U | | < 0.0024 | U | | 0.0024 | J | | < 0.0024 | U | | < 0.006 | U | | < 0.0024 | U | | < 0.03 | U | |
| | VMP-43 (20-22.5)090911 | 20 - 22.5 ft | 9/9/2011 | < 0.0022 | U | | < 0.0022 | U | | 0.0026 | J | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.027 | U | |
| | VMP-43 (30-31.5)090911 | 30 - 31.5 ft | 9/9/2011 | < 0.0023 | U | | < 0.0023 | U | | 0.0018 | J | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.028 | U | |
| | VMP-43(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0022 | U | | < 0.0022 | U | | 0.0087 | | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.028 | U | |
| VMP-44 | VMP-44 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.0028 | U | | < 0.0028 | U | | < 0.0069 | U | | < 0.0028 | U | | < 0.0069 | U | | < 0.0028 | U | | < 0.034 | U | |
| | VMP-44 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.0028 | U | | < 0.0028 | U | | < 0.007 | U | | < 0.0028 | U | | < 0.007 | U | | < 0.0028 | U | | < 0.035 | U | |
| | VMP-44 (9-10)102111 | 9 - 10 ft | 10/21/2011 | < 1.2 | U | | < 1.2 | U | | 8.77 | | | < 1.2 | U | | < 2.9 | U | | < 1.2 | U | | < 15 | U | |
| VMP-45 | VMP-45 (10-11)110111 | 10 - 11 ft | 11/1/2011 | < 0.0025 | U | | < 0.0025 | U | | < 0.0064 | U | | < 0.0025 | U | | < 0.0064 | U | | < 0.0025 | U | | < 0.032 | U | |
| | VMP-45 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.003 | U | | < 0.003 | U | | < 0.0076 | U | | < 0.003 | U | | < 0.0076 | U | | < 0.003 | U | | < 0.038 | U | |
| | VMP-45 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.35 | U | | < 0.35 | U | | 0.176 | J | | < 0.35 | U | | < 0.86 | U | | < 0.35 | U | | < 4.3 | U | |
| | VMP-45 (30-31)110111-DUP | 30 - 31 ft | 11/1/2011 | < 0.0031 | U | | < 0.0031 | U | | 0.0013 | J | | < 0.0031 | U | | < 0.0077 | U | | < 0.0031 | U | | < 0.039 | U | |
| VMP-46 | VMP 46 (10-11) 092311 | 10 - 11 ft | 9/23/2011 | < 0.0026 | U | | < 0.0026 | U | | 0.003 | J | J | < 0.0026 | U | | < 0.0065 | U | | < 0.0026 | U | | < 0.032 | U | |
| | VMP46 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 0.0028 | U | | < 0.0028 | U | | 0.0044 | J | J | < 0.0028 | U | | < 0.0069 | U | | < 0.0028 | U | | < 0.035 | U | |
| | VMP46 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.028 | U | |
| | VMP46 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0026 | U | | < 0.0026 | U | | 0.0228 | | J | < 0.0026 | U | | < 0.0064 | U | | < 0.0026 | U | | < 0.032 | U | |

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | 2,2-Dichloropropane | | | 2-Butanone | | | 2-Chloroethyl vinyl ether | | | 2-Chlorotoluene | | | 2-Hexanone (Methyl N-Butyl Ketone) | | | 4-Chlorotoluene | | | 4-Methyl-2-pentanone (Methyl Isobutyl Ketone) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| VMP-36 | VMP36 (10-11)092211 | 10 - 11 ft | 9/22/2011 | < 1.6 | U | | < 1.6 | U | | < 1.6 | U | | < 1.6 | U | | < 1.6 | U | | < 1.6 | U | | < 1.6 | U | |
| | VMP36 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | | < 3.1 | U | |
| | VMP36 (10-12.5)092711-DUP | 10 - 12.5 ft | 9/27/2011 | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | | < 1.4 | U | |
| | VMP36 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 2.9 | U | | < 2.9 | U | | < 2.9 | U | | < 2.9 | U | | < 2.9 | U | | < 2.9 | U | | < 2.9 | U | |
| | VMP36 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | |
| VMP-37 | VMP37 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 140 | U | | < 140 | U | | < 140 | U | | < 140 | U | | < 140 | U | | < 140 | U | | < 140 | U | |
| | VMP37 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 25 | U | | < 25 | U | | < 25 | U | | < 25 | U | | < 25 | U | | < 25 | U | | < 25 | U | |
| | VMP37 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | |
| | VMP37 (6-7)092111 | 6 - 7 ft | 9/21/2011 | < 8.4 | U | | < 8.4 | U | | < 8.4 | U | | < 8.4 | U | | < 8.4 | U | | < 8.4 | U | | < 8.4 | U | |
| VMP-38 | VMP38 (10-12.5)091311 | 10 - 12.5 ft | 9/13/2011 | < 0.61 | U | | < 0.61 | U | | < 0.61 | U | | < 0.61 | U | | < 0.61 | U | | < 0.61 | U | | < 0.61 | U | |
| | VMP38 (20-22.5)091311 | 20 - 22.5 ft | 9/13/2011 | < 4.8 | U | | < 4.8 | U | | < 4.8 | U | | < 4.8 | U | | < 4.8 | U | | < 4.8 | U | | < 4.8 | U | |
| | VMP38 (27-28)091311 | 27 - 28 ft | 9/13/2011 | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| | VMP38 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 1.6 | U | | < 1.6 | U | | < 1.6 | U | | < 1.6 | U | | < 1.6 | U | | < 1.6 | U | | < 1.6 | U | |
| VMP-39 | VMP39 (10-12.5)91511 | 10 - 12.5 ft | 9/15/2011 | < 6.3 | U | | < 6.3 | U | | < 6.3 | U | | < 6.3 | U | | < 6.3 | U | | < 6.3 | U | | < 6.3 | U | |
| | VMP39 (20-22.5)91511 | 20 - 22.5 ft | 9/15/2011 | < 0.54 | U | | < 0.54 | U | | < 0.54 | U | | < 0.54 | U | | < 0.54 | U | | < 0.54 | U | | < 0.54 | U | |
| | VMP39 (20-22.5)91511-DUP | 20 - 22.5 ft | 9/15/2011 | < 0.62 | U | | < 0.62 | U | | < 0.62 | U | | < 0.62 | U | | < 0.62 | U | | < 0.62 | U | | < 0.62 | U | |
| | VMP39 (30-31)91511 | 30 - 31 ft | 9/15/2011 | < 3 | U | | < 3 | U | | < 3 | U | | < 3 | U | | < 3 | U | | < 3 | U | | < 3 | U | |
| | VMP39 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 2.2 | U | | < 2.2 | U | | < 2.2 | U | | < 2.2 | U | | < 2.2 | U | | < 2.2 | U | | < 2.2 | U | |
| VMP-40 | VMP40 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | |
| | VMP40 (10-12.5)092611-DUP | 10 - 12.5 ft | 9/26/2011 | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | |
| | VMP40 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| | VMP40 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | |
| VMP-41 | VMP-41 (25-27)090911 | 25 - 27 ft | 9/9/2011 | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | |
| | VMP-41(10-12.5)-090811 | 10 - 12.5 ft | 9/8/2011 | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | |
| | VMP-41(20-22.5)-090811 | 20 - 22.5 ft | 9/8/2011 | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| VMP-42 | VMP42 (10-12.5)91211 | 10 - 12.5 ft | 9/12/2011 | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | |
| | VMP42 (20-22.5)91211 | 20 - 22.5 ft | 9/12/2011 | < 0.0094 | U | | < 0.0094 | U | | < 0.0094 | U | | < 0.0094 | U | | < 0.0094 | U | | < 0.0094 | U | | < 0.0094 | U | |
| | VMP42 (30-31.5)91211 | 30 - 31.5 ft | 9/12/2011 | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | |
| | VMP-42(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | |
| VMP-43 | VMP-43 (10-12.5)090911 | 10 - 12.5 ft | 9/9/2011 | < 0.006 | U | | < 0.006 | U | | < 0.006 | U | | < 0.006 | U | | < 0.006 | U | | < 0.006 | U | | < 0.006 | U | |
| | VMP-43 (20-22.5)090911 | 20 - 22.5 ft | 9/9/2011 | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | |
| | VMP-43 (30-31.5)090911 | 30 - 31.5 ft | 9/9/2011 | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | |
| | VMP-43(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | |
| VMP-44 | VMP-44 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.0069 | U | | < 0.0069 | U | | < 0.0069 | U | | < 0.0069 | U | | < 0.0069 | U | | < 0.0069 | U | | < 0.0069 | U | |
| | VMP-44 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | |
| | VMP-44 (9-10)102111 | 9 - 10 ft | 10/21/2011 | < 2.9 | U | | < 2.9 | U | | < 2.9 | U | | < 2.9 | U | | < 2.9 | U | | < 2.9 | U | | < 2.9 | U | |
| VMP-45 | VMP-45 (10-11)110111 | 10 - 11 ft | 11/1/2011 | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | |
| | VMP-45 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.0076 | U | | < 0.0076 | U | | < 0.0076 | U | | < 0.0076 | U | | < 0.0076 | U | | < 0.0076 | U | | < 0.0076 | U | |
| | VMP-45 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.86 | U | | < 0.86 | U | | < 0.86 | U | | < 0.86 | U | | < 0.86 | U | | < 0.86 | U | | < 0.86 | U | |
| | VMP-45 (30-31)110111-DUP | 30 - 31 ft | 11/1/2011 | < 0.0077 | U | | < 0.0077 | U | | < 0.0077 | U | | < 0.0077 | U | | < 0.0077 | U | | < 0.0077 | U | | < 0.0077 | U | |
| VMP-46 | VMP 46 (10-11) 092311 | 10 - 11 ft | 9/23/2011 | < 0.0065 | U | | < 0.0065 | U | | < 0.0065 | U | | < 0.0065 | U | | < 0.0065 | U | | < 0.0065 | U | | < 0.0065 | U | |
| | VMP46 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 0.0069 | U | | < 0.051 | | U | < 0.0069 | U | | < 0.0069 | U | | < 0.0069 | U | | < 0.0069 | U | | < 0.0069 | U | |
| | VMP46 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | |
| | VMP46 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0064 | U | | < 0.0184 | | U | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | |

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | Acetone | | | Acrolein | | | Acrylonitrile | | | Benzene | | | Bromobenzene | | | Bromochloromethane | | | Bromodichloromethane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| VMP-36 | VMP36 (10-11)092211 | 10 - 11 ft | 9/22/2011 | < 1.6 | U | | < 7.9 | U | | < 1.6 | U | | 0.183 | | | < 1.6 | U | | < 1.6 | U | | < 0.63 | U | |
| | VMP36 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 3.1 | U | | < 15 | U | | < 3.1 | U | | < 0.31 | U | | < 3.1 | U | | < 3.1 | U | | < 1.2 | U | |
| | VMP36 (10-12.5)092711-DUP | 10 - 12.5 ft | 9/27/2011 | < 1.4 | U | | < 7 | U | | < 1.4 | U | | < 0.14 | U | | < 1.4 | U | | < 1.4 | U | | < 0.56 | U | |
| | VMP36 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 2.9 | U | | < 14 | U | | < 2.9 | U | | < 0.29 | U | | < 2.9 | U | | < 2.9 | U | | < 1.2 | U | |
| | VMP36 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0057 | U | | < 0.029 | U | | < 0.0057 | U | | 0.0205 | | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | |
| VMP-37 | VMP37 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 140 | U | | < 690 | U | | < 140 | U | | 37.3 | | | < 140 | U | | < 140 | U | | < 55 | U | |
| | VMP37 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 25 | U | | < 130 | U | | < 25 | U | | 6.86 | | | < 25 | U | | < 25 | U | | < 10 | U | |
| | VMP37 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.6 | U | | < 3 | U | | < 0.6 | U | | < 0.06 | U | | < 0.6 | U | | < 0.6 | U | | < 0.24 | U | |
| | VMP37 (6-7)092111 | 6 - 7 ft | 9/21/2011 | < 8.4 | U | | < 42 | U | | < 8.4 | U | | < 0.84 | U | | < 8.4 | U | | < 8.4 | U | | < 3.4 | U | |
| VMP-38 | VMP38 (10-12.5)091311 | 10 - 12.5 ft | 9/13/2011 | < 0.61 | U | | < 3 | U | UJ | < 0.61 | U | | < 0.061 | U | | < 0.61 | U | | < 0.61 | U | | < 0.24 | U | |
| | VMP38 (20-22.5)091311 | 20 - 22.5 ft | 9/13/2011 | < 4.8 | U | | < 24 | U | UJ | < 4.8 | U | | < 0.48 | U | | < 4.8 | U | | < 4.8 | U | | < 1.9 | U | |
| | VMP38 (27-28)091311 | 27 - 28 ft | 9/13/2011 | < 0.0094 | | U | < 0.027 | U | | < 0.0054 | U | | 0.00059 | | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | |
| | VMP38 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 1.6 | U | | < 8 | U | | < 1.6 | U | | < 0.16 | U | | < 1.6 | U | | < 1.6 | U | | < 0.64 | U | |
| VMP-39 | VMP39 (10-12.5)91511 | 10 - 12.5 ft | 9/15/2011 | < 6.3 | U | | < 31 | U | | < 6.3 | U | | < 0.63 | U | | < 6.3 | U | | < 6.3 | U | | < 2.5 | U | |
| | VMP39 (20-22.5)91511 | 20 - 22.5 ft | 9/15/2011 | < 0.54 | U | | < 2.7 | U | | < 0.54 | U | | < 0.054 | U | | < 0.54 | U | | < 0.54 | U | | < 0.22 | U | |
| | VMP39 (20-22.5)91511-DUP | 20 - 22.5 ft | 9/15/2011 | < 0.62 | U | | < 3.1 | U | | < 0.62 | U | | < 0.062 | U | | < 0.62 | U | | < 0.62 | U | | < 0.25 | U | |
| | VMP39 (30-31)91511 | 30 - 31 ft | 9/15/2011 | < 3 | U | | < 15 | U | | < 3 | U | | < 0.3 | U | | < 3 | U | | < 3 | U | | < 1.2 | U | |
| | VMP39 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 2.2 | U | | < 11 | U | | < 2.2 | U | | 3.2 | | | < 2.2 | U | | < 2.2 | U | | < 0.89 | U | |
| VMP-40 | VMP40 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 2.5 | U | | < 13 | U | | < 2.5 | U | | 0.246 | J | | < 2.5 | U | | < 2.5 | U | | < 1 | U | |
| | VMP40 (10-12.5)092611-DUP | 10 - 12.5 ft | 9/26/2011 | < 1.2 | U | | < 6 | U | | < 1.2 | U | | 0.0708 | J | | < 1.2 | U | | < 1.2 | U | | < 0.48 | U | |
| | VMP40 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0054 | U | | < 0.027 | U | | < 0.0054 | U | | 0.0095 | | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | |
| | VMP40 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0058 | U | | < 0.029 | U | | < 0.0058 | U | | 0.0129 | | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | |
| VMP-41 | VMP-41 (25-27)090911 | 25 - 27 ft | 9/9/2011 | < 0.0052 | U | | < 0.026 | U | | < 0.0052 | U | | 0.0021 | | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | |
| | VMP-41(10-12.5)-090811 | 10 - 12.5 ft | 9/8/2011 | < 0.0226 | | U | < 0.028 | U | | < 0.0056 | U | | < 0.00056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | |
| | VMP-41(20-22.5)-090811 | 20 - 22.5 ft | 9/8/2011 | < 0.0054 | U | | < 0.027 | U | | < 0.0054 | U | | < 0.00054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | |
| VMP-42 | VMP42 (10-12.5)91211 | 10 - 12.5 ft | 9/12/2011 | < 0.0145 | | U | < 0.028 | U | | < 0.0055 | U | | < 0.00055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | |
| | VMP42 (20-22.5)91211 | 20 - 22.5 ft | 9/12/2011 | < 0.0299 | | U | < 0.047 | U | | < 0.0094 | U | | < 0.00094 | U | | < 0.0094 | U | | < 0.0094 | U | | < 0.0038 | U | |
| | VMP42 (30-31.5)91211 | 30 - 31.5 ft | 9/12/2011 | < 0.0202 | B | U | < 0.03 | U | | < 0.0059 | U | | < 0.00059 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0024 | U | |
| | VMP-42(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0525 | | U | < 0.033 | U | | < 0.0066 | U | | < 0.00066 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0026 | U | |
| VMP-43 | VMP-43 (10-12.5)090911 | 10 - 12.5 ft | 9/9/2011 | < 0.0141 | | U | < 0.03 | U | | < 0.006 | U | | 0.0017 | | | < 0.006 | U | | < 0.006 | U | | < 0.0024 | U | |
| | VMP-43 (20-22.5)090911 | 20 - 22.5 ft | 9/9/2011 | < 0.0072 | | U | < 0.027 | U | | < 0.0055 | U | | 0.006 | | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | |
| | VMP-43 (30-31.5)090911 | 30 - 31.5 ft | 9/9/2011 | < 0.0035 | J | U | < 0.028 | U | | < 0.0057 | U | | 0.0019 | | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | |
| | VMP-43(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.188 | | U | < 0.028 | U | | < 0.0056 | U | | 0.12 | | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | |
| VMP-44 | VMP-44 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.0169 | B | U | < 0.034 | U | | < 0.0069 | U | | 0.0016 | | | < 0.0069 | U | | < 0.0069 | U | | < 0.0028 | U | |
| | VMP-44 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.0299 | B | U | < 0.035 | U | | < 0.007 | U | | 0.0375 | | | < 0.007 | U | | < 0.007 | U | | < 0.0028 | U | |
| | VMP-44 (9-10)102111 | 9 - 10 ft | 10/21/2011 | < 2.9 | U | | < 15 | U | | < 2.9 | U | | 0.248 | J | | < 2.9 | U | | < 2.9 | U | | < 1.2 | U | |
| VMP-45 | VMP-45 (10-11)110111 | 10 - 11 ft | 11/1/2011 | < 0.0224 | B | U | < 0.032 | U | | < 0.0064 | U | | < 0.00064 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0025 | U | |
| | VMP-45 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.0159 | B | U | < 0.038 | U | | < 0.0076 | U | | 0.0012 | | | < 0.0076 | U | | < 0.0076 | U | | < 0.003 | U | |
| | VMP-45 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.86 | U | | < 4.3 | U | | < 0.86 | U | | < 0.086 | U | | < 0.86 | U | | < 0.86 | U | | < 0.35 | U | |
| | VMP-45 (30-31)110111-DUP | 30 - 31 ft | 11/1/2011 | < 0.113 | B | U | < 0.039 | U | | < 0.0077 | U | | 0.002 | | | < 0.0077 | U | | < 0.0077 | U | | < 0.0031 | U | |
| VMP-46 | VMP 46 (10-11) 092311 | 10 - 11 ft | 9/23/2011 | < 0.179 | | U | < 0.032 | U | | < 0.0065 | U | | 0.0084 | | J | < 0.0065 | U | | < 0.0065 | U | | < 0.0026 | U | |
| | VMP46 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 0.0069 | U | | < 0.035 | U | | < 0.0069 | U | | 0.0174 | | J | < 0.0069 | U | | < 0.0069 | U | | < 0.0028 | U | |
| | VMP46 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0056 | U | | < 0.028 | U | | < 0.0056 | U | | 0.0028 | | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | |
| | VMP46 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0064 | U | | < 0.032 | U | | < 0.0064 | U | | 0.0664 | | J | < 0.0064 | U | | < 0.0064 | U | | < 0.0026 | U | |

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | Bromoform | | | Bromomethane | | | Carbon disulfide | | | Carbon tetrachloride | | | Chlorobenzene | | | Chlorodibromomethane | | | Chloroethane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| VMP-36 | VMP36 (10-11)092211 | 10 - 11 ft | 9/22/2011 | < 0.63 | U | | < 0.63 | U | | < 1.6 | U | | < 0.63 | U | | < 0.63 | U | | < 0.63 | U | | < 1.6 | U | |
| | VMP36 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 1.2 | U | | < 1.2 | U | | < 3.1 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 3.1 | U | |
| | VMP36 (10-12.5)092711-DUP | 10 - 12.5 ft | 9/27/2011 | < 0.56 | U | | < 0.56 | U | | < 1.4 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | | < 1.4 | U | |
| | VMP36 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 1.2 | U | | < 1.2 | U | | < 2.9 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 2.9 | U | |
| | VMP36 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | |
| VMP-37 | VMP37 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 55 | U | | < 55 | U | | < 140 | U | | < 55 | U | | < 55 | U | | < 55 | U | | < 140 | U | |
| | VMP37 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 10 | U | | < 10 | U | | < 25 | U | | < 10 | U | | < 10 | U | | < 10 | U | | < 25 | U | |
| | VMP37 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.24 | U | | < 0.24 | U | | < 0.6 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.6 | U | |
| | VMP37 (6-7)092111 | 6 - 7 ft | 9/21/2011 | < 3.4 | U | | < 3.4 | U | | < 8.4 | U | | < 3.4 | U | | < 3.4 | U | | < 3.4 | U | | < 8.4 | U | |
| VMP-38 | VMP38 (10-12.5)091311 | 10 - 12.5 ft | 9/13/2011 | < 0.24 | U | | < 0.24 | U | | < 0.61 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.61 | U | |
| | VMP38 (20-22.5)091311 | 20 - 22.5 ft | 9/13/2011 | < 1.9 | U | | < 1.9 | U | | < 4.8 | U | | < 1.9 | U | | < 1.9 | U | | < 1.9 | U | | < 4.8 | U | |
| | VMP38 (27-28)091311 | 27 - 28 ft | 9/13/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | |
| | VMP38 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 0.64 | U | | < 0.64 | U | | < 1.6 | U | | < 0.64 | U | | < 0.64 | U | | < 0.64 | U | | < 1.6 | U | |
| VMP-39 | VMP39 (10-12.5)91511 | 10 - 12.5 ft | 9/15/2011 | < 2.5 | U | | < 2.5 | U | | < 6.3 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 6.3 | U | |
| | VMP39 (20-22.5)91511 | 20 - 22.5 ft | 9/15/2011 | < 0.22 | U | | < 0.22 | U | | < 0.54 | U | | < 0.22 | U | | < 0.22 | U | | < 0.22 | U | | < 0.54 | U | |
| | VMP39 (20-22.5)91511-DUP | 20 - 22.5 ft | 9/15/2011 | < 0.25 | U | | < 0.25 | U | | < 0.62 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.62 | U | |
| | VMP39 (30-31)91511 | 30 - 31 ft | 9/15/2011 | < 1.2 | U | | < 1.2 | U | | < 3 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 3 | U | |
| | VMP39 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 0.89 | U | | < 0.89 | U | | < 2.2 | U | | < 0.89 | U | | < 0.89 | U | | < 0.89 | U | | < 2.2 | U | |
| VMP-40 | VMP40 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 1 | U | | < 1 | U | | < 2.5 | U | | < 1 | U | | < 1 | U | | < 1 | U | | < 2.5 | U | |
| | VMP40 (10-12.5)092611-DUP | 10 - 12.5 ft | 9/26/2011 | < 0.48 | U | | < 0.48 | U | | < 1.2 | U | | < 0.48 | U | | < 0.48 | U | | < 0.48 | U | | < 1.2 | U | |
| | VMP40 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | |
| | VMP40 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | |
| VMP-41 | VMP-41 (25-27)090911 | 25 - 27 ft | 9/9/2011 | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | |
| | VMP-41(10-12.5)-090811 | 10 - 12.5 ft | 9/8/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | |
| | VMP-41(20-22.5)-090811 | 20 - 22.5 ft | 9/8/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | |
| VMP-42 | VMP42 (10-12.5)91211 | 10 - 12.5 ft | 9/12/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| | VMP42 (20-22.5)91211 | 20 - 22.5 ft | 9/12/2011 | < 0.0038 | U | | < 0.0038 | U | | < 0.0094 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0094 | U | |
| | VMP42 (30-31.5)91211 | 30 - 31.5 ft | 9/12/2011 | < 0.0024 | U | | < 0.0024 | U | | < 0.0059 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0059 | U | |
| | VMP-42(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0026 | U | | < 0.0026 | U | | < 0.0066 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0066 | U | |
| VMP-43 | VMP-43 (10-12.5)090911 | 10 - 12.5 ft | 9/9/2011 | < 0.0024 | U | | < 0.0024 | U | | < 0.006 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.006 | U | |
| | VMP-43 (20-22.5)090911 | 20 - 22.5 ft | 9/9/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| | VMP-43 (30-31.5)090911 | 30 - 31.5 ft | 9/9/2011 | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | |
| | VMP-43(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | |
| VMP-44 | VMP-44 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.0028 | U | | < 0.0028 | U | | 0.0069 | | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0069 | U | |
| | VMP-44 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.0028 | U | | < 0.0028 | U | | 0.0058 | J | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.007 | U | |
| | VMP-44 (9-10)102111 | 9 - 10 ft | 10/21/2011 | < 1.2 | U | | < 1.2 | U | | < 2.9 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 2.9 | U | |
| VMP-45 | VMP-45 (10-11)110111 | 10 - 11 ft | 11/1/2011 | < 0.0025 | U | | < 0.0025 | U | | 0.0056 | J | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0064 | U | |
| | VMP-45 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.003 | U | | < 0.003 | U | | 0.0063 | J | | < 0.003 | U | | < 0.003 | U | | < 0.003 | U | | < 0.0076 | U | |
| | VMP-45 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.35 | U | | < 0.35 | U | | < 0.86 | U | | < 0.35 | U | | < 0.35 | U | | < 0.35 | U | | < 0.86 | U | |
| | VMP-45 (30-31)110111-DUP | 30 - 31 ft | 11/1/2011 | < 0.0031 | U | | < 0.0031 | U | | 0.0065 | J | | < 0.0031 | U | | < 0.0031 | U | | < 0.0031 | U | | < 0.0077 | U | |
| VMP-46 | VMP 46 (10-11) 092311 | 10 - 11 ft | 9/23/2011 | < 0.0026 | U | | < 0.0026 | U | | < 0.0065 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0065 | U | |
| | VMP46 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 0.0028 | U | | < 0.0028 | U | | < 0.0069 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0069 | U | |
| | VMP46 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | |
| | VMP46 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0026 | U | | < 0.0026 | U | | < 0.0064 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0064 | U | |

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | Chloroform | | | Chloromethane | | | cis-1,2-Dichloroethene | | | cis-1,3-Dichloropropene | | | Cymene (p-Isopropyltoluene) | | | Dibromomethane | | | Dichlorodifluoromethane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| VMP-36 | VMP36 (10-11)092211 | 10 - 11 ft | 9/22/2011 | < 0.63 | U | | < 1.6 | U | | < 0.63 | U | | < 0.63 | U | | 1.05 | J | | < 1.6 | U | | < 0.63 | U | |
| | VMP36 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 1.2 | U | | < 3.1 | U | | < 1.2 | U | | < 1.2 | U | | 1.6 | J | | < 3.1 | U | | < 1.2 | U | |
| | VMP36 (10-12.5)092711-DUP | 10 - 12.5 ft | 9/27/2011 | < 0.56 | U | | < 1.4 | U | | < 0.56 | U | | < 0.56 | U | | 0.313 | J | | < 1.4 | U | | < 0.56 | U | |
| | VMP36 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 1.2 | U | | < 2.9 | U | | < 1.2 | U | | < 1.2 | U | | 0.174 | J | | < 2.9 | U | | < 1.2 | U | |
| | VMP36 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | |
| VMP-37 | VMP37 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 55 | U | | < 140 | U | | < 55 | U | | < 55 | U | | 10 | J | | < 140 | U | | < 55 | U | |
| | VMP37 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 10 | U | | < 25 | U | | < 10 | U | | < 10 | U | | 1.76 | J | | < 25 | U | | < 10 | U | |
| | VMP37 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.24 | U | | < 0.6 | U | | < 0.24 | U | | < 0.24 | U | | 0.254 | J | | < 0.6 | U | | < 0.24 | U | |
| | VMP37 (6-7)092111 | 6 - 7 ft | 9/21/2011 | < 3.4 | U | | < 8.4 | U | | < 3.4 | U | | < 3.4 | U | | 2.99 | J | | < 8.4 | U | | < 3.4 | U | |
| VMP-38 | VMP38 (10-12.5)091311 | 10 - 12.5 ft | 9/13/2011 | < 0.24 | U | | < 0.61 | U | | < 0.24 | U | | < 0.24 | U | | < 0.61 | U | | < 0.61 | U | | < 0.24 | U | |
| | VMP38 (20-22.5)091311 | 20 - 22.5 ft | 9/13/2011 | < 1.9 | U | | < 4.8 | U | | < 1.9 | U | | < 1.9 | U | | < 4.8 | U | | < 4.8 | U | | < 1.9 | U | |
| | VMP38 (27-28)091311 | 27 - 28 ft | 9/13/2011 | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | |
| | VMP38 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 0.64 | U | | < 1.6 | U | | < 0.64 | U | | < 0.64 | U | | < 1.6 | U | | < 1.6 | U | | < 0.64 | U | UJ |
| VMP-39 | VMP39 (10-12.5)91511 | 10 - 12.5 ft | 9/15/2011 | < 2.5 | U | | < 6.3 | U | | < 2.5 | U | | < 2.5 | U | | 3.36 | J | | < 6.3 | U | | < 2.5 | U | |
| | VMP39 (20-22.5)91511 | 20 - 22.5 ft | 9/15/2011 | < 0.22 | U | | < 0.54 | U | | < 0.22 | U | | < 0.22 | U | | 0.0947 | J | | < 0.54 | U | | < 0.22 | U | |
| | VMP39 (20-22.5)91511-DUP | 20 - 22.5 ft | 9/15/2011 | < 0.25 | U | | < 0.62 | U | | < 0.25 | U | | < 0.25 | U | | 0.274 | J | | < 0.62 | U | | < 0.25 | U | |
| | VMP39 (30-31)91511 | 30 - 31 ft | 9/15/2011 | < 1.2 | U | | < 3 | U | | < 1.2 | U | | < 1.2 | U | | 2.56 | J | | < 3 | U | | < 1.2 | U | |
| | VMP39 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 0.89 | U | | < 2.2 | U | | < 0.89 | U | | < 0.89 | U | | 1.39 | J | | < 2.2 | U | | < 0.89 | U | UJ |
| VMP-40 | VMP40 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 1 | U | | < 2.5 | U | | < 1 | U | | < 1 | U | | 0.196 | J | | < 2.5 | U | | < 1 | U | |
| | VMP40 (10-12.5)092611-DUP | 10 - 12.5 ft | 9/26/2011 | < 0.48 | U | | < 1.2 | U | | < 0.48 | U | | < 0.48 | U | | 0.124 | J | | < 1.2 | U | | < 0.48 | U | |
| | VMP40 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | |
| | VMP40 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | |
| VMP-41 | VMP-41 (25-27)090911 | 25 - 27 ft | 9/9/2011 | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | |
| | VMP-41(10-12.5)-090811 | 10 - 12.5 ft | 9/8/2011 | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | |
| | VMP-41(20-22.5)-090811 | 20 - 22.5 ft | 9/8/2011 | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | |
| VMP-42 | VMP42 (10-12.5)91211 | 10 - 12.5 ft | 9/12/2011 | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | |
| | VMP42 (20-22.5)91211 | 20 - 22.5 ft | 9/12/2011 | < 0.0038 | U | | < 0.0094 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0094 | U | | < 0.0094 | U | | < 0.0038 | U | |
| | VMP42 (30-31.5)91211 | 30 - 31.5 ft | 9/12/2011 | < 0.0024 | U | | < 0.0059 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0024 | U | |
| | VMP-42(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0026 | U | | < 0.0066 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0026 | U | |
| VMP-43 | VMP-43 (10-12.5)090911 | 10 - 12.5 ft | 9/9/2011 | < 0.0024 | U | | < 0.006 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.006 | U | | < 0.006 | U | | < 0.0024 | U | |
| | VMP-43 (20-22.5)090911 | 20 - 22.5 ft | 9/9/2011 | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | |
| | VMP-43 (30-31.5)090911 | 30 - 31.5 ft | 9/9/2011 | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | |
| | VMP-43(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | |
| VMP-44 | VMP-44 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.0028 | U | | < 0.0069 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0069 | U | | < 0.0069 | U | | < 0.0028 | U | |
| | VMP-44 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.0028 | U | | < 0.007 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.007 | U | | < 0.007 | U | | < 0.0028 | U | |
| | VMP-44 (9-10)102111 | 9 - 10 ft | 10/21/2011 | < 1.2 | U | | < 2.9 | U | | < 1.2 | U | | < 1.2 | U | | 2.91 | | | < 2.9 | U | | < 1.2 | U | |
| VMP-45 | VMP-45 (10-11)110111 | 10 - 11 ft | 11/1/2011 | < 0.0025 | U | | < 0.0064 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0025 | U | |
| | VMP-45 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.003 | U | | < 0.0076 | U | | < 0.003 | U | | < 0.003 | U | | < 0.0076 | U | | < 0.0076 | U | | < 0.003 | U | |
| | VMP-45 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.35 | U | | < 0.86 | U | | < 0.35 | U | | < 0.35 | U | | 0.0566 | J | | < 0.86 | U | | < 0.35 | U | |
| | VMP-45 (30-31)110111-DUP | 30 - 31 ft | 11/1/2011 | < 0.0031 | U | | < 0.0077 | U | | < 0.0031 | U | | < 0.0031 | U | | 0.0031 | J | | < 0.0077 | U | | < 0.0031 | U | |
| VMP-46 | VMP 46 (10-11) 092311 | 10 - 11 ft | 9/23/2011 | < 0.0026 | U | | < 0.0065 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0065 | U | | < 0.0065 | U | | < 0.0026 | U | |
| | VMP46 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 0.0028 | U | | < 0.0069 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0069 | U | | < 0.0069 | U | | < 0.0028 | U | |
| | VMP46 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | |
| | VMP46 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0026 | U | | < 0.0064 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0026 | U | |

| Location | Sample ID | Depth | Sample Date | Dichloromethane (Methylene chloride) | | | Ethyl methacrylate | | | Ethylbenzene | | | Hexachlorobutadiene | | | Isopropylbenzene (Cumene) | | | m,p-Xylene | | | Methyl tert-Butyl Ether (MTBE) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| VMP-36 | VMP36 (10-11)092211 | 10 - 11 ft | 9/22/2011 | < 0.63 | U | | < 1.6 | U | | 0.161 | J | | < 1.6 | U | | 1.81 | | | 0.938 | | | < 0.63 | U | |
| | VMP36 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 1.2 | U | | < 3.1 | U | | < 1.2 | U | | < 3.1 | U | | 2.5 | J | | 1.05 | J | | < 1.2 | U | |
| | VMP36 (10-12.5)092711-DUP | 10 - 12.5 ft | 9/27/2011 | < 0.56 | U | | < 1.4 | U | | < 0.56 | U | | < 1.4 | U | | 0.497 | J | | < 0.56 | U | | < 0.56 | U | |
| | VMP36 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 1.2 | U | | < 2.9 | U | | 1.09 | J | | < 2.9 | U | | 0.38 | J | | 3.87 | | | < 1.2 | U | |
| | VMP36 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0023 | U | | < 0.0057 | U | | 0.0118 | | | < 0.0057 | U | | < 0.0057 | U | | 0.0256 | | | < 0.0023 | U | |
| VMP-37 | VMP37 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 55 | U | | < 140 | U | | 205 | | | < 140 | U | | 20 | J | | 551 | | | < 55 | U | |
| | VMP37 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 10 | U | | < 25 | U | | 2.87 | J | | < 25 | U | | 12.2 | J | | 6.72 | J | | < 10 | U | |
| | VMP37 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.136 | J | U | < 0.6 | U | | 3.46 | | | < 0.6 | U | | 0.718 | | | 2.82 | | | < 0.24 | U | |
| | VMP37 (6-7)092111 | 6 - 7 ft | 9/21/2011 | < 3.4 | U | | < 8.4 | U | | 33.2 | | | < 8.4 | U | | 8.14 | J | | 86.8 | | | < 3.4 | U | |
| VMP-38 | VMP38 (10-12.5)091311 | 10 - 12.5 ft | 9/13/2011 | < 0.24 | U | | < 0.61 | U | | < 0.24 | U | | < 0.61 | U | | < 0.61 | U | | < 0.24 | U | | < 0.24 | U | |
| | VMP38 (20-22.5)091311 | 20 - 22.5 ft | 9/13/2011 | < 1.9 | U | | < 4.8 | U | | 43.7 | | | < 4.8 | U | | < 4.8 | U | | 69.2 | | | < 1.9 | U | |
| | VMP38 (27-28)091311 | 27 - 28 ft | 9/13/2011 | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | VMP38 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 0.64 | U | | < 1.6 | U | | < 0.64 | U | | < 1.6 | U | | 0.51 | J | | < 0.64 | U | | < 0.64 | U | |
| VMP-39 | VMP39 (10-12.5)91511 | 10 - 12.5 ft | 9/15/2011 | < 2.5 | U | | < 6.3 | U | | 107 | | | < 6.3 | U | | 12.8 | | | 37.2 | | | < 2.5 | U | |
| | VMP39 (20-22.5)91511 | 20 - 22.5 ft | 9/15/2011 | < 0.22 | U | | < 0.54 | U | | 0.299 | | | < 0.54 | U | | 0.124 | J | | 0.267 | | | < 0.22 | U | |
| | VMP39 (20-22.5)91511-DUP | 20 - 22.5 ft | 9/15/2011 | < 0.25 | U | | < 0.62 | U | | 1.25 | | | < 0.62 | U | | 0.451 | J | | 1.05 | | | < 0.25 | U | |
| | VMP39 (30-31)91511 | 30 - 31 ft | 9/15/2011 | < 1.2 | U | | < 3 | U | | 26.7 | | | < 3 | U | | 6.05 | | | 13.5 | | | < 1.2 | U | |
| | VMP39 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 0.89 | U | | < 2.2 | U | | 28.4 | | | < 2.2 | U | | 4.05 | | | 14.9 | | | < 0.89 | U | |
| VMP-40 | VMP40 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 1 | U | | < 2.5 | U | | < 1 | U | | < 2.5 | U | | 0.701 | J | | < 1 | U | | < 1 | U | |
| | VMP40 (10-12.5)092611-DUP | 10 - 12.5 ft | 9/26/2011 | < 0.296 | J | U | < 1.2 | U | | < 0.48 | U | | < 1.2 | U | | 0.419 | J | | < 0.48 | U | | < 0.48 | U | |
| | VMP40 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0022 | U | | < 0.0054 | U | | 0.0055 | | | < 0.0054 | U | | 0.0029 | J | | 0.0024 | | | < 0.0022 | U | |
| | VMP40 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0023 | U | | < 0.0058 | U | | 0.0036 | | | < 0.0058 | U | | < 0.0058 | U | | 0.0016 | J | | < 0.0023 | U | |
| VMP-41 | VMP-41 (25-27)090911 | 25 - 27 ft | 9/9/2011 | < 0.0021 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0021 | U | |
| | VMP-41(10-12.5)-090811 | 10 - 12.5 ft | 9/8/2011 | < 0.0022 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | VMP-41(20-22.5)-090811 | 20 - 22.5 ft | 9/8/2011 | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | |
| VMP-42 | VMP42 (10-12.5)91211 | 10 - 12.5 ft | 9/12/2011 | < 0.0022 | U | | < 0.0055 | U | | 0.0034 | | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | VMP42 (20-22.5)91211 | 20 - 22.5 ft | 9/12/2011 | < 0.0038 | U | | < 0.0094 | U | | < 0.0038 | U | | < 0.0094 | U | | < 0.0094 | U | | < 0.0038 | U | | < 0.0038 | U | |
| | VMP42 (30-31.5)91211 | 30 - 31.5 ft | 9/12/2011 | < 0.0024 | U | | < 0.0059 | U | | < 0.0024 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0024 | U | | < 0.0024 | U | |
| | VMP-42(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0026 | U | | < 0.0066 | U | | < 0.0026 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0026 | U | | < 0.0026 | U | |
| VMP-43 | VMP-43 (10-12.5)090911 | 10 - 12.5 ft | 9/9/2011 | < 0.0024 | U | | < 0.006 | U | | < 0.0024 | U | | < 0.006 | U | | < 0.006 | U | | 0.0067 | | | < 0.0024 | U | |
| | VMP-43 (20-22.5)090911 | 20 - 22.5 ft | 9/9/2011 | < 0.0022 | U | | < 0.0055 | U | | 0.0047 | | | < 0.0055 | U | | < 0.0055 | U | | 0.0174 | | | < 0.0022 | U | |
| | VMP-43 (30-31.5)090911 | 30 - 31.5 ft | 9/9/2011 | < 0.0023 | U | | < 0.0057 | U | | 0.0031 | | | < 0.0057 | U | | < 0.0057 | U | | 0.0071 | | | < 0.0023 | U | |
| | VMP-43(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0022 | U | | < 0.0056 | U | | 0.0501 | | | < 0.0056 | U | | 0.003 | J | | 0.121 | | | < 0.0022 | U | |
| VMP-44 | VMP-44 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.0028 | U | | < 0.0069 | U | | 0.0041 | | | < 0.0069 | U | | < 0.0069 | U | | 0.0029 | | | < 0.0028 | U | |
| | VMP-44 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.0028 | U | | < 0.007 | U | | 0.0042 | | | < 0.007 | U | | < 0.007 | U | | 0.0028 | | | < 0.0028 | U | |
| | VMP-44 (9-10)102111 | 9 - 10 ft | 10/21/2011 | < 1.2 | U | | < 2.9 | U | | 7.86 | | | < 2.9 | U | | 8.57 | | | 11.8 | | | < 1.2 | U | |
| VMP-45 | VMP-45 (10-11)110111 | 10 - 11 ft | 11/1/2011 | < 0.0025 | U | | < 0.0064 | U | | < 0.0025 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0025 | U | | < 0.0025 | U | |
| | VMP-45 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.003 | U | | < 0.0076 | U | | 0.0028 | J | | < 0.0076 | U | | < 0.0076 | U | | 0.00096 | J | | < 0.003 | U | |
| | VMP-45 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.35 | U | | < 0.86 | U | | < 0.35 | U | | < 0.86 | U | | 0.106 | J | | < 0.35 | U | | < 0.35 | U | |
| | VMP-45 (30-31)110111-DUP | 30 - 31 ft | 11/1/2011 | < 0.0031 | U | | < 0.0077 | U | | 0.0031 | | | < 0.0077 | U | | 0.0038 | J | | 0.003 | J | | < 0.0031 | U | |
| VMP-46 | VMP 46 (10-11) 092311 | 10 - 11 ft | 9/23/2011 | < 0.0026 | U | | < 0.0065 | U | | 0.0134 | | J | < 0.0065 | U | | 0.0017 | J | J | 0.0081 | | J | < 0.0026 | U | |
| | VMP46 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 0.0028 | U | | < 0.0069 | U | | 0.0165 | | J | < 0.0069 | U | | 0.0022 | J | J | 0.0104 | | J | < 0.0028 | U | |
| | VMP46 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0022 | U | | < 0.0056 | U | | 0.0056 | | | < 0.0056 | U | | < 0.0056 | U | | 0.0045 | | | < 0.0022 | U | |
| | VMP46 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0026 | U | | < 0.0064 | U | | 0.0447 | | J | < 0.0064 | U | | 0.006 | J | J | 0.0501 | | J | 0.0039 | | J |

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | Naphthalene | | | n-Butylbenzene | | | n-Propylbenzene | | | o-Xylenes | | | sec-Butylbenzene | | | Styrene | | | tert-Butylbenzene | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| VMP-36 | VMP36 (10-11)092211 | 10 - 11 ft | 9/22/2011 | < 1.6 | U | | 3.62 | | | 2.33 | | | 0.308 | J | | 2.05 | | | < 1.6 | U | | < 1.6 | U | |
| | VMP36 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 3.1 | U | | 4.47 | | | 2.81 | J | | < 1.2 | U | | 2.75 | J | | < 3.1 | U | | < 3.1 | U | |
| | VMP36 (10-12.5)092711-DUP | 10 - 12.5 ft | 9/27/2011 | < 1.4 | U | | 0.858 | J | | 0.533 | J | | < 0.56 | U | | 0.533 | J | | < 1.4 | U | | < 1.4 | U | |
| | VMP36 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 2.9 | U | | < 2.9 | U | | 0.491 | J | | < 1.2 | U | | 0.133 | J | | < 2.9 | U | | < 2.9 | U | |
| | VMP36 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0057 | U | | < 0.0057 | U | | 0.0017 | J | | 0.0072 | | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | |
| VMP-37 | VMP37 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 140 | U | | < 140 | U | | 52 | J | | 219 | | | 6.25 | J | | < 140 | U | | < 140 | U | |
| | VMP37 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 25 | U | | 8.77 | J | | 29.7 | | | < 10 | U | | 3.99 | J | | < 25 | U | | < 25 | U | |
| | VMP37 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | 1.95 | | | 0.967 | | | 1.87 | | | 0.141 | J | | 0.254 | J | | < 0.6 | U | | < 0.6 | U | |
| | VMP37 (6-7)092111 | 6 - 7 ft | 9/21/2011 | 35.9 | | | 20.2 | | | 21.4 | | | 48.3 | | | 4.21 | J | | < 8.4 | U | | < 8.4 | U | |
| VMP-38 | VMP38 (10-12.5)091311 | 10 - 12.5 ft | 9/13/2011 | < 0.61 | U | | 1.92 | | | 0.75 | | | < 0.24 | U | | < 0.61 | U | | < 0.61 | U | | < 0.61 | U | |
| | VMP38 (20-22.5)091311 | 20 - 22.5 ft | 9/13/2011 | 10.7 | | | 5.58 | | | 14.2 | | | < 1.9 | U | | < 4.8 | U | | < 4.8 | U | | < 4.8 | U | |
| | VMP38 (27-28)091311 | 27 - 28 ft | 9/13/2011 | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| | VMP38 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 1.6 | U | | 3.63 | | | 2.35 | | | < 0.64 | U | | 0.811 | J | | < 1.6 | U | | < 1.6 | U | |
| VMP-39 | VMP39 (10-12.5)91511 | 10 - 12.5 ft | 9/15/2011 | 17.8 | | | 8.67 | | | 27 | | | < 2.5 | U | | 3.68 | J | | < 6.3 | U | | < 6.3 | U | |
| | VMP39 (20-22.5)91511 | 20 - 22.5 ft | 9/15/2011 | 0.544 | | | 0.182 | J | | 0.188 | J | | < 0.22 | U | | 0.0682 | J | | < 0.54 | U | | < 0.54 | U | |
| | VMP39 (20-22.5)91511-DUP | 20 - 22.5 ft | 9/15/2011 | 1.14 | | | 0.554 | J | | 0.665 | | | < 0.25 | U | | 0.203 | J | | < 0.62 | U | | < 0.62 | U | |
| | VMP39 (30-31)91511 | 30 - 31 ft | 9/15/2011 | 10.9 | | | 5.45 | | | 9 | | | 1.08 | J | | 2.01 | J | | < 3 | U | | < 3 | U | |
| | VMP39 (9-10)091211 | 9 - 10 ft | 9/12/2011 | 4.15 | | | 4.13 | | | 8.64 | | | 1.13 | | | 1.72 | J | | < 2.2 | U | | < 2.2 | U | |
| VMP-40 | VMP40 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 2.5 | U | | < 2.5 | U | | 0.825 | J | | < 1 | U | | 0.531 | J | | < 2.5 | U | | < 2.5 | U | |
| | VMP40 (10-12.5)092611-DUP | 10 - 12.5 ft | 9/26/2011 | < 1.2 | U | | 0.332 | J | | 0.431 | J | | < 0.48 | U | | 0.325 | J | | < 1.2 | U | | < 1.2 | U | |
| | VMP40 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | 0.0351 | | | 0.0134 | | J | 0.0038 | J | | 0.0011 | J | | 0.0025 | J | | < 0.0054 | U | | < 0.0054 | U | |
| | VMP40 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | 0.0216 | | | 0.0122 | | | 0.0018 | J | | 0.00065 | J | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | |
| VMP-41 | VMP-41 (25-27)090911 | 25 - 27 ft | 9/9/2011 | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0021 | U | | < 0.0052 | U | | < 0.0052 | U | | < 0.0052 | U | |
| | VMP-41(10-12.5)-090811 | 10 - 12.5 ft | 9/8/2011 | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0022 | U | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | |
| | VMP-41(20-22.5)-090811 | 20 - 22.5 ft | 9/8/2011 | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0054 | U | | < 0.0054 | U | | < 0.0054 | U | |
| VMP-42 | VMP42 (10-12.5)91211 | 10 - 12.5 ft | 9/12/2011 | < 0.0055 | U | | < 0.0055 | U | | 0.00085 | J | | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | |
| | VMP42 (20-22.5)91211 | 20 - 22.5 ft | 9/12/2011 | < 0.0094 | U | | < 0.0094 | U | | < 0.0094 | U | | < 0.0038 | U | | < 0.0094 | U | | < 0.0094 | U | | < 0.0094 | U | |
| | VMP42 (30-31.5)91211 | 30 - 31.5 ft | 9/12/2011 | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0024 | U | | < 0.0059 | U | | < 0.0059 | U | | < 0.0059 | U | |
| | VMP-42(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0026 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | |
| VMP-43 | VMP-43 (10-12.5)090911 | 10 - 12.5 ft | 9/9/2011 | < 0.006 | U | | < 0.006 | U | | 0.0018 | J | | < 0.0024 | U | | < 0.006 | U | | < 0.006 | U | | < 0.006 | U | |
| | VMP-43 (20-22.5)090911 | 20 - 22.5 ft | 9/9/2011 | < 0.0055 | U | | < 0.0055 | U | | 0.0022 | J | | 0.0024 | | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | |
| | VMP-43 (30-31.5)090911 | 30 - 31.5 ft | 9/9/2011 | < 0.0057 | U | | < 0.0057 | U | | 0.0018 | J | | 0.0016 | J | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | |
| | VMP-43(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0056 | U | | < 0.0056 | U | | 0.0073 | | | 0.0208 | | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | |
| VMP-44 | VMP-44 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.0069 | U | | < 0.0069 | U | | < 0.0069 | U | | 0.00081 | J | | < 0.0069 | U | | < 0.0069 | U | | < 0.0069 | U | |
| | VMP-44 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.007 | U | | < 0.007 | U | | 0.00078 | J | | 0.00061 | J | | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | |
| | VMP-44 (9-10)102111 | 9 - 10 ft | 10/21/2011 | 17.5 | | | 11.3 | | | 16.8 | | | 3.85 | | | 3.96 | | | < 2.9 | U | | < 2.9 | U | |
| VMP-45 | VMP-45 (10-11)110111 | 10 - 11 ft | 11/1/2011 | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0025 | U | | < 0.0064 | U | | < 0.0064 | U | | < 0.0064 | U | |
| | VMP-45 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.0076 | U | | < 0.0076 | U | | < 0.0076 | U | | < 0.003 | U | | < 0.0076 | U | | < 0.0076 | U | | < 0.0076 | U | |
| | VMP-45 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.86 | U | | 0.272 | J | | 0.168 | J | | < 0.35 | U | | 0.114 | J | | < 0.86 | U | | < 0.86 | U | |
| | VMP-45 (30-31)110111-DUP | 30 - 31 ft | 11/1/2011 | 0.0431 | | | 0.0166 | | | 0.0041 | J | | 0.002 | J | | 0.0116 | | | < 0.0077 | U | | 0.0024 | J | |
| VMP-46 | VMP 46 (10-11) 092311 | 10 - 11 ft | 9/23/2011 | < 0.0065 | U | | < 0.0065 | U | | 0.004 | J | J | 0.0028 | | J | < 0.0065 | U | | < 0.0065 | U | | < 0.0065 | U | |
| | VMP46 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 0.0069 | U | | < 0.0069 | U | | 0.0051 | J | J | 0.0037 | | J | 0.0015 | J | J | < 0.0069 | U | | < 0.0069 | U | |
| | VMP46 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | | 0.0012 | J | | < 0.0056 | U | | < 0.0056 | U | | < 0.0056 | U | |
| | VMP46 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | 0.0108 | | J | 0.0175 | | J | 0.0122 | | J | 0.0184 | | J | 0.0033 | J | J | < 0.0064 | U | | < 0.0064 | U | |

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | Tetrachloroethene | | | Toluene | | | trans-1,2-Dichloroethene | | | trans-1,3-Dichloropropene | | | Trichloroethene | | | Trichlorofluoromethane | | | Vinyl acetate | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| VMP-36 | VMP36 (10-11)092211 | 10 - 11 ft | 9/22/2011 | < 0.63 | U | | < 1.6 | U | | < 0.63 | U | | < 0.63 | U | | < 0.63 | U | | < 0.63 | U | | < 1.6 | U | |
| | VMP36 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 1.2 | U | | < 3.1 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 3.1 | U | |
| | VMP36 (10-12.5)092711-DUP | 10 - 12.5 ft | 9/27/2011 | < 0.56 | U | | < 1.4 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | | < 0.56 | U | | < 1.4 | U | |
| | VMP36 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 1.2 | U | | < 2.9 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 2.9 | U | |
| | VMP36 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0023 | U | | 0.0073 | | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | |
| VMP-37 | VMP37 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 55 | U | | 358 | | | < 55 | U | | < 55 | U | | < 55 | U | | < 55 | U | | < 140 | U | |
| | VMP37 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 10 | U | | < 25 | U | | < 10 | U | | < 10 | U | | < 10 | U | | < 10 | U | | < 25 | U | |
| | VMP37 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.24 | U | | 0.0956 | J | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.6 | U | |
| | VMP37 (6-7)092111 | 6 - 7 ft | 9/21/2011 | < 3.4 | U | | 12.4 | | | < 3.4 | U | | < 3.4 | U | | < 3.4 | U | | < 3.4 | U | | < 8.4 | U | |
| VMP-38 | VMP38 (10-12.5)091311 | 10 - 12.5 ft | 9/13/2011 | < 0.24 | U | | < 0.61 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.24 | U | | < 0.61 | U | UJ |
| | VMP38 (20-22.5)091311 | 20 - 22.5 ft | 9/13/2011 | < 1.9 | U | | < 4.8 | U | | < 1.9 | U | | < 1.9 | U | | < 1.9 | U | | < 1.9 | U | | < 4.8 | U | UJ |
| | VMP38 (27-28)091311 | 27 - 28 ft | 9/13/2011 | < 0.0022 | U | | < 0.0054 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | |
| | VMP38 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 0.64 | U | | < 1.6 | U | | < 0.64 | U | | < 0.64 | U | | < 0.64 | U | | < 0.64 | U | | < 1.6 | U | UJ |
| VMP-39 | VMP39 (10-12.5)91511 | 10 - 12.5 ft | 9/15/2011 | < 2.5 | U | | < 6.3 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 2.5 | U | | < 6.3 | U | |
| | VMP39 (20-22.5)91511 | 20 - 22.5 ft | 9/15/2011 | < 0.22 | U | | < 0.54 | U | | < 0.22 | U | | < 0.22 | U | | < 0.22 | U | | < 0.22 | U | | < 0.54 | U | |
| | VMP39 (20-22.5)91511-DUP | 20 - 22.5 ft | 9/15/2011 | < 0.25 | U | | < 0.62 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.25 | U | | < 0.62 | U | |
| | VMP39 (30-31)91511 | 30 - 31 ft | 9/15/2011 | < 1.2 | U | | < 3 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 3 | U | |
| | VMP39 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 0.89 | U | | < 2.2 | U | | < 0.89 | U | | < 0.89 | U | | < 0.89 | U | | < 0.89 | U | | < 2.2 | U | UJ |
| VMP-40 | VMP40 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 1 | U | | < 2.5 | U | | < 1 | U | | < 1 | U | | < 1 | U | | < 1 | U | | < 2.5 | U | |
| | VMP40 (10-12.5)092611-DUP | 10 - 12.5 ft | 9/26/2011 | < 0.48 | U | | < 1.2 | U | | < 0.48 | U | | < 0.48 | U | | < 0.48 | U | | < 0.48 | U | | < 1.2 | U | |
| | VMP40 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0022 | U | | 0.0057 | | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | |
| | VMP40 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0023 | U | | 0.0037 | J | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | |
| VMP-41 | VMP-41 (25-27)090911 | 25 - 27 ft | 9/9/2011 | < 0.0021 | U | | 0.0035 | J | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0021 | U | | < 0.0052 | U | |
| | VMP-41(10-12.5)-090811 | 10 - 12.5 ft | 9/8/2011 | < 0.0022 | U | | 0.00072 | J | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | |
| | VMP-41(20-22.5)-090811 | 20 - 22.5 ft | 9/8/2011 | < 0.0022 | U | | 0.0016 | J | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0054 | U | |
| VMP-42 | VMP42 (10-12.5)91211 | 10 - 12.5 ft | 9/12/2011 | < 0.0022 | U | | 0.0074 | | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| | VMP42 (20-22.5)91211 | 20 - 22.5 ft | 9/12/2011 | < 0.0038 | U | | 0.0057 | J | | < 0.0038 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0038 | U | | < 0.0094 | U | |
| | VMP42 (30-31.5)91211 | 30 - 31.5 ft | 9/12/2011 | < 0.0024 | U | | 0.006 | | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0059 | U | |
| | VMP-42(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0026 | U | | 0.0022 | J | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0066 | U | |
| VMP-43 | VMP-43 (10-12.5)090911 | 10 - 12.5 ft | 9/9/2011 | < 0.0024 | U | | 0.0056 | J | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.006 | U | |
| | VMP-43 (20-22.5)090911 | 20 - 22.5 ft | 9/9/2011 | < 0.0022 | U | | 0.0132 | | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| | VMP-43 (30-31.5)090911 | 30 - 31.5 ft | 9/9/2011 | < 0.0023 | U | | 0.0121 | | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | |
| | VMP-43(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0022 | U | | 0.04 | | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | |
| VMP-44 | VMP-44 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.0028 | U | | 0.0037 | J | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0069 | U | |
| | VMP-44 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.0028 | U | | 0.0042 | J | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.007 | U | |
| | VMP-44 (9-10)102111 | 9 - 10 ft | 10/21/2011 | < 1.2 | U | | 0.618 | J | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 1.2 | U | | < 2.9 | U | |
| VMP-45 | VMP-45 (10-11)110111 | 10 - 11 ft | 11/1/2011 | < 0.0025 | U | | 0.00067 | J | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0064 | U | |
| | VMP-45 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.003 | U | | 0.003 | J | | < 0.003 | U | | < 0.003 | U | | < 0.003 | U | | < 0.003 | U | | < 0.0076 | U | |
| | VMP-45 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.35 | U | | < 0.86 | U | | < 0.35 | U | | < 0.35 | U | | < 0.35 | U | | < 0.35 | U | | < 0.86 | U | |
| | VMP-45 (30-31)110111-DUP | 30 - 31 ft | 11/1/2011 | < 0.0031 | U | | 0.0038 | J | | < 0.0031 | U | | < 0.0031 | U | | < 0.0031 | U | | < 0.0031 | U | | < 0.0077 | U | |
| VMP-46 | VMP 46 (10-11) 092311 | 10 - 11 ft | 9/23/2011 | < 0.0026 | U | | 0.01 | | J | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0065 | U | |
| | VMP46 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 0.0028 | U | | 0.0112 | | J | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0069 | U | |
| | VMP46 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0022 | U | | 0.0046 | J | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0056 | U | |
| | VMP46 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0026 | U | | 0.0163 | | J | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0064 | U | |

Table E-2
SVE Install

| Location | Sample ID | Depth | Sample Date | Vinyl chloride | | | Xylenes (total) | | | TPH (>C28-C40) | | | TPH (C10-C28) | | | TPH-GRO (VOA) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| VMP-36 | VMP36 (10-11)092211 | 10 - 11 ft | 9/22/2011 | < 0.63 | U | | 1.25 | | | 170 | | | 3680 | | | 636 | | |
| | VMP36 (10-12.5)092711 | 10 - 12.5 ft | 9/27/2011 | < 1.2 | U | | 1.05 | | J | 63.6 | | | 2450 | | | 970 | | J |
| | VMP36 (10-12.5)092711-DUP | 10 - 12.5 ft | 9/27/2011 | < 0.56 | U | | < 0.56 | | U | 73.6 | | | 2780 | | | 35.9 | | J |
| | VMP36 (20-22.5)092711 | 20 - 22.5 ft | 9/27/2011 | < 1.2 | U | | 3.87 | | | < 960 | U | | 1070 | | | 4920 | | |
| | VMP36 (30-31.5)092711 | 30 - 31.5 ft | 9/27/2011 | < 0.0023 | U | | 0.0328 | | | < 17 | U | | < 17 | U | | 4.62 | J | |
| VMP-37 | VMP37 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 55 | U | | 769 | | | 37 | | | 3900 | | | 8650 | | |
| | VMP37 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 10 | U | | 6.72 | | J | 136 | | | 2810 | | | 3320 | | |
| | VMP37 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.24 | U | | 2.97 | | | < 17 | U | | 345 | | | 105 | | |
| | VMP37 (6-7)092111 | 6 - 7 ft | 9/21/2011 | < 3.4 | U | | 135 | | | < 18 | U | | 615 | | | 499 | | |
| VMP-38 | VMP38 (10-12.5)091311 | 10 - 12.5 ft | 9/13/2011 | < 0.24 | U | UJ | < 0.24 | | U | < 17 | U | | 19.8 | | | 386 | | |
| | VMP38 (20-22.5)091311 | 20 - 22.5 ft | 9/13/2011 | < 1.9 | U | UJ | 69.2 | | | 72 | | | 246 | | | 1240 | | |
| | VMP38 (27-28)091311 | 27 - 28 ft | 9/13/2011 | < 0.0022 | U | | < 0.0022 | | U | < 17 | U | | < 17 | U | | 14 | | |
| | VMP38 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 0.64 | U | UJ | < 0.64 | | U | < 21 | U | | 113 | | | 404 | | |
| VMP-39 | VMP39 (10-12.5)91511 | 10 - 12.5 ft | 9/15/2011 | < 2.5 | U | UJ | 37.2 | | | 124 | | | 3360 | | | 4270 | | |
| | VMP39 (20-22.5)91511 | 20 - 22.5 ft | 9/15/2011 | < 0.22 | U | UJ | 0.267 | | | < 17 | U | | 71.7 | | | 49 | | J |
| | VMP39 (20-22.5)91511-DUP | 20 - 22.5 ft | 9/15/2011 | < 0.25 | U | UJ | 1.05 | | | < 17 | U | | 57.5 | | | 121 | | J |
| | VMP39 (30-31)91511 | 30 - 31 ft | 9/15/2011 | < 1.2 | U | UJ | 14.5 | | | 66.3 | | | 884 | | | 2020 | | |
| | VMP39 (9-10)091211 | 9 - 10 ft | 9/12/2011 | < 0.89 | U | UJ | 16 | | | 242 | | | 5480 | | | 1770 | | |
| VMP-40 | VMP40 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 1 | U | | < 1 | | U | 184 | | J | 5790 | | J | 483 | | |
| | VMP40 (10-12.5)092611-DUP | 10 - 12.5 ft | 9/26/2011 | < 0.48 | U | | < 0.48 | | U | 78.7 | | J | 2310 | | J | 349 | | |
| | VMP40 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0022 | U | | 0.0035 | | | < 17 | U | | 89.2 | | | 5.11 | J | |
| | VMP40 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0023 | U | | 0.0023 | | | < 16 | U | | < 16 | U | | 6.08 | J | |
| VMP-41 | VMP-41 (25-27)090911 | 25 - 27 ft | 9/9/2011 | < 0.0021 | U | | < 0.0021 | | U | < 19 | U | | < 19 | U | | < 12 | U | |
| | VMP-41(10-12.5)-090811 | 10 - 12.5 ft | 9/8/2011 | < 0.0022 | U | | < 0.0022 | | U | < 17 | U | | < 17 | U | | < 12 | U | |
| | VMP-41(20-22.5)-090811 | 20 - 22.5 ft | 9/8/2011 | < 0.0022 | U | | < 0.0022 | | U | < 16 | U | | < 16 | U | | < 12 | U | |
| VMP-42 | VMP42 (10-12.5)91211 | 10 - 12.5 ft | 9/12/2011 | < 0.0022 | U | | < 0.0022 | | U | < 18 | U | | < 18 | U | | < 14 | U | |
| | VMP42 (20-22.5)91211 | 20 - 22.5 ft | 9/12/2011 | < 0.0038 | U | | < 0.0038 | | U | < 18 | U | | < 18 | U | | < 13 | U | |
| | VMP42 (30-31.5)91211 | 30 - 31.5 ft | 9/12/2011 | < 0.0024 | U | | < 0.0024 | | U | < 17 | U | | < 17 | U | | < 13 | U | |
| | VMP-42(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0026 | U | | < 0.0026 | | U | < 17 | U | | < 17 | U | | < 14 | U | |
| VMP-43 | VMP-43 (10-12.5)090911 | 10 - 12.5 ft | 9/9/2011 | < 0.0024 | U | | 0.0067 | | | < 17 | U | | < 17 | U | | < 12 | U | |
| | VMP-43 (20-22.5)090911 | 20 - 22.5 ft | 9/9/2011 | < 0.0022 | U | | 0.0198 | | | < 17 | U | | < 17 | U | | < 5.9 | U | |
| | VMP-43 (30-31.5)090911 | 30 - 31.5 ft | 9/9/2011 | < 0.0023 | U | | 0.0087 | | | < 17 | U | | < 17 | U | | < 12 | U | |
| | VMP-43(9-10)-090811 | 9 - 10 ft | 9/8/2011 | < 0.0022 | U | | 0.142 | | | < 19 | U | | < 19 | U | | < 13 | U | |
| VMP-44 | VMP-44 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.0028 | U | | 0.0038 | | | < 17 | U | | < 17 | U | | < 18 | U | |
| | VMP-44 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.0028 | U | | 0.0035 | | | < 21 | U | | < 21 | U | | < 23 | U | |
| | VMP-44 (9-10)102111 | 9 - 10 ft | 10/21/2011 | < 1.2 | U | | 15.6 | | | 18.5 | | | 839 | | | 2650 | | |
| VMP-45 | VMP-45 (10-11)110111 | 10 - 11 ft | 11/1/2011 | < 0.0025 | U | | < 0.0025 | | U | 13.6 | J | | 14 | J | | < 15 | U | |
| | VMP-45 (20-21)110111 | 20 - 21 ft | 11/1/2011 | < 0.003 | U | | 0.00096 | | J | < 17 | U | | < 17 | U | | < 17 | U | |
| | VMP-45 (30-31)110111 | 30 - 31 ft | 11/1/2011 | < 0.35 | U | | < 0.35 | | U | < 17 | U | | 975 | | | 86.6 | | |
| | VMP-45 (30-31)110111-DUP | 30 - 31 ft | 11/1/2011 | < 0.0031 | U | | 0.0049 | | | 21.9 | | | 861 | | | 33.8 | | |
| VMP-46 | VMP 46 (10-11) 092311 | 10 - 11 ft | 9/23/2011 | < 0.0026 | U | | 0.0109 | J | | < 19 | U | | < 19 | U | | < 14 | U | |
| | VMP46 (10-12.5)092611 | 10 - 12.5 ft | 9/26/2011 | < 0.0028 | U | | 0.0141 | J | | < 19 | U | | < 19 | U | | < 15 | U | |
| | VMP46 (20-22.5)092611 | 20 - 22.5 ft | 9/26/2011 | < 0.0022 | U | | 0.0057 | | | < 17 | U | | < 17 | U | | < 12 | U | |
| | VMP46 (30-31.5)092611 | 30 - 31.5 ft | 9/26/2011 | < 0.0026 | U | | 0.0685 | J | | < 19 | U | | < 19 | U | | < 14 | U | |

Notes:

**Lab Qualifiers**

J = Estimated value; results between the MDL and RL

U = Compound analyzed for but not detected above the RL

**URS Qualifiers**

J = Estimated detection

UJ = Estimated non-detect

U = Non-detect, e.g. blank contamination

# SVE Install 2011 Data Review

**Laboratory SDG: MC3417**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 12/16/2011**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| VMP-41 (10-12.5)-090811 | VMP-41 (20-22.5)-090811 |
| SVE-21 (30-32)-090811 | SVE-22 (30-32)-090811 |
| VMP-43 (9-10)-090811 | SVE-23 (24-26)-090811 |
| SVE-27 (30-32)-090711 | SVE-24 (30-34)-090711 |
| VMP-42 (9-10)-090811 | SVE-26 (30-32)-090711 |
| TB-090811 | |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS recoveries were outside evaluation criteria. VOC MS/MSD recoveries and MS/MSD RPDs were outside evaluation criteria in sample SVE-21 (30-32)-090811. Internal standard area recoveries for the initial run results for sample SVE-23 (24-26)-090811 were outside evaluation criteria. Professional judgment was used to qualify acetone in samples VMP-41 (10-12.5)-090811, VMP-43 (9-10)-090811, and VMP-42(9-10)-090811. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 1.7° C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSV78-BS | VOCs | Acrolein | **316** | NA | 70-130 |
| MSV78-BS | VOCs | Acrylonitrile | **588** | NA | 70-130 |
| MSE2258-BS | VOCs | Acrolein | **251** | NA | 70-130 |
| MSE2258-BS | VOCs | Acrylonitrile | **448** | NA | 70-130 |
| MSE2258-BS | VOCs | Hexachlorobutadiene | **136** | NA | 70-130 |
| MSM1397-BS2 | VOCs | Acetone | **183** | NA | 70-130 |
| MSM1397-BS2 | VOCs | Acrolein | **36** | NA | 70-130 |
| MSM1397-BS2 | VOCs | Benzene | **446** | NA | 70-130 |
| MSM1397-BS2 | VOCs | Hexechlorobutadiene | **142** | NA | 70-130 |
| MSM1397-BS2 | VOCs | 2-Hexanone | **157** | NA | 70-130 |
| MSM1397-BS2 | VOCs | Vinyl acetate | **61** | NA | 70-130 |
| MSV85-BS | VOCs | Acetone | **158** | NA | 70-130 |
| MSV85-BS | VOCs | Acrolein | **317** | NA | 70-130 |
| MSV85-BS | VOCs | Acrylonitrile | **646** | NA | 70-130 |
| MSV87-BS | VOCs | Acetone | **138** | NA | 70-130 |
| MSV87-BS | VOCs | Acrolein | **317** | NA | 70-130 |
| MSV87-BS | VOCs | Acrylonitrile | **628** | NA | 70-130 |

Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS MSM1397-BS2 was associated with trip blank sample TB090811. Trip blank samples are quality control samples and are not qualified. No qualification of data was required.

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, sample SVE-21 (30-32)-090811 was spiked and analyzed for VOCs, and sample VMP-41 (10-12.5)-090811 was spiked and analyzed for TPH-GRO.

*Were MS/MSD recoveries within evaluation criteria?*

No

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/RPD Criteria |
|---|---|---|---|---|---|
| SVE-21 (30-32)-090811 | VOCs | Acrolein | **285/240** | 30 | 70-130/30 |

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/RPD Criteria |
|---|---|---|---|---|---|
| SVE-21 (30-32)-090811 | VOCs | Acrylonitrile | **623/565** | 23 | 70-130/30 |
| SVE-21 (30-32)-090811 | VOCs | 2-Butanone (MEK) | **156/194** | 8 | 70-130/30 |
| SVE-21 (30-32)-090811 | VOCs | n-Butylbenzene | 114/89 | **38** | 70-130/30 |
| SVE-21 (30-32)-090811 | VOCs | 2-Chloroethyl vinyl ether | **0/0** | NA | 70-130/30 |
| SVE-21 (30-32)-090811 | VOCs | 1,2-Dibromo-3-chloropropane | **145/131** | 23 | 70-130/30 |
| SVE-21 (30-32)-090811 | VOCs | 1,2-Dichlorobenzene | 108/86 | **36** | 70-130/30 |
| SVE-21 (30-32)-090811 | VOCs | 1,2-Dichloroethane | **134**/130 | 16 | 70-130/30 |
| SVE-21 (30-32)-090811 | VOCs | cis-1,2-Dichloroethene | 106/85 | **36** | 70-130/30 |
| SVE-21 (30-32)-090811 | VOCs | 1,4-Dioxane | **155/179** | 1 | 70-130/30 |
| SVE-21 (30-32)-090811 | VOCs | 2-Hexanone | **173/183** | 8 | 70-130/30 |
| SVE-21 (30-32)-090811 | VOCs | 4-Methyl-2-pentanone (MIBK) | **176/205** | 2 | 70-130/30 |
| SVE-21 (30-32)-090811 | VOCs | Methylene bromide | 112/**132** | 3 | 70-130/30 |
| SVE-21 (30-32)-090811 | VOCs | n-Propylbenzene | 94/78 | **32** | 70-130/30 |
| SVE-21 (30-32)-090811 | VOCs | Vinyl acetate | 73/**69** | 19 | 70-130/30 |

USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone and LCS recoveries were within evaluation criteria with the exception of compounds listed and qualified as appropriate in Section 5.0 of this data review. No further qualification of the data was required.

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

No

| Sample ID | Parameter | Analyte | IS Area Recovery | IS Criteria |
|---|---|---|---|---|
| SVE-23 (24-26)-090811 | VOCs | Pentafluorobenzene | **74894** | 198979-795916 |
| SVE-23 (24-26)-090811 | VOCs | 1,4-Difluorobenzene | **120924** | 297824-1191294 |
| SVE-23 (24-26)-090811 | VOCs | Chlorobenzene-$d_5$ | **71581** | 164761-659042 |
| SVE-23 (24-26)-090811 | VOCs | 1,4-Difluorobenzene –$d_4$ | **70105** | 170607-682426 |
| SVE-23 (24-26)-090811 | VOCs | Tert butyl alcohol – $d_4$ | **42576** | 60525-242098 |

The initial run results for sample SVE-23 (24-26)-090811 were outside criteria; however,

results were reported from the second confirmation analyses that were inside criteria. No qualification of the data was required.

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

No

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

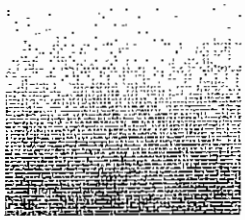
*Were additional qualifications applied?*

Yes, professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations greater than two times (2X) the reporting limit (RL), since acetone is not representative of site conditions. Additionally, USEPA Method 5035A states that acidification of certain soils with sodium bisulfate may produce a false positive acetone artifact of 100-200 ppb, or more. Acetone reported at concentrations less than 200 ppb (ug/kg) were qualified.

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| VMP-41 (10-12.5)-090811 | Acetone | 22.6 ug/kg | **U** | Professional Judgment |
| VMP-43 (9-10)-090811 | Acetone | 188 ug/kg | **U** | Professional Judgment |
| VMP-42 (9-10)-090811 | Acetone | 52.5 ug/kg | **U** | Professional Judgment |

New England ACCUTEST LABORATORIES

11/23/11





## Technical Report for

Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC3417

Sampling Dates: 09/07/11 - 09/08/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **149**

Reviewed on 12/16/2011

Reza Rand
Lab Director

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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# Sample Summary

Shell Oil

Job No: MC3417

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| MC3417-1 | 09/08/11 | 16:00 | KWMM | 09/09/11 | SO | Soil | VMP-41(10-12.5)-090811 |
| MC3417-2 | 09/08/11 | 16:15 | KWMM | 09/09/11 | SO | Soil | VMP-41(20-22.5)-090811 |
| MC3417-3 | 09/08/11 | 13:27 | KWMM | 09/09/11 | SO | Soil | SVE-21(30-32)-090811 |
| MC3417-4 | 09/08/11 | 11:30 | KWMM | 09/09/11 | SO | Soil | SVE-22(30-32)-090811 |
| MC3417-5 | 09/08/11 | 14:30 | KWMM | 09/09/11 | SO | Soil | VMP-43(9-10)-090811 |
| MC3417-6 | 09/08/11 | 09:30 | KWMM | 09/09/11 | SO | Soil | SVE-23(24-26)-090811 |
| MC3417-7 | 09/07/11 | 15:00 | KWMM | 09/09/11 | SO | Soil | SVE-27(30-32)-090711 |
| MC3417-8 | 09/07/11 | 13:15 | KWMM | 09/09/11 | SO | Soil | SVE-24(30-34)-090711 |
| MC3417-9 | 09/08/11 | 15:35 | KWMM | 09/09/11 | SO | Soil | VMP-42(9-10)-090811 |
| MC3417-10 | 09/07/11 | 14:10 | KWMM | 09/09/11 | SO | Soil | SVE-26(30-32)-090711 |
| MC3417-11 | 09/08/11 | 00:00 | KWMM | 09/09/11 | AQ | Trip Blank Water | TB-090811 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC3417 |
| **Site:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Ra | **Report Date** | 9/26/2011 3:24:16 PM |

10 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were collected on between 09/07/2011 and 09/08/2011 and were received at Accutest on 09/09/2011 properly preserved, at 1.7 Deg. C and intact. These Samples received an Accutest job number of MC3417. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSM1397

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3349-3MS, MC3349-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Acrolein, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for 2-Chloroethyl vinyl ether, Acrolein, Hexachlorobutadiene, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSM1397-BS2 for 2-Hexanone, Acetone, Acrylonitrile, Hexachlorobutadiene: Outside control limits. Associated samples are non-detect for this compound.
- MC3349-3MS/3MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

**Matrix** SO **Batch ID:** MSE2258

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3464-4MS, MC3464-4MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for 1,4-Dioxane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for Hexachlorobutadiene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 2-Chloroethyl vinyl ether are outside control limits for sample MC3464-4MSD. High RPD due to possible matrix interference and/or sample non-homogencity.
- MSE2258-BS for Acrolein, Acrylonitrile, Hexachlorobutadiene: Outside control limits. Associated samples are non-detect for this compound.
- MC3464-4MS/4MSD for Acrolein, Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

**Matrix** SO **Batch ID:** MSE2261

- MC3417-6: Confirmation run.

**Matrix** SO **Batch ID:** MSV78

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3417-3MS, MC3417-3MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Acrolein, Acrylonitrile are outside control limits.
- Matrix Spike Recovery(s) for 1,2-Dibromo-3-chloropropane, 1,2-Dichloroethane, 1,4-Dioxane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

## Volatiles by GCMS By Method SW846 8260B

| Matrix SO | Batch ID: MSV78 |
|---|---|

- Matrix Spike Duplicate Recovery(s) for 1,2-Dibromo-3-chloropropane, 1,4-Dioxane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Methylene bromide, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 1,2-Dichlorobenzene, eis-1,2-Dichloroethene, n-Butylbenzene, n-Propylbenzene are outside control limits for sample MC3417-3MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- MSV78-BS/MS/MSD for Acrolein, Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

| Matrix SO | Batch ID: MSV85 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3617-17MS, MC3617-17MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Acetone are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,1,2,2-Tetrachloroethane, 1,2,3-Triehlorobenzene, 1,2,4-Trichlorobenzene, 1,4-Dichlorobenzene, 1,4-Dioxane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Hexachlorobutadiene, Naphthalene, trans-1,3-Dichloropropene are outside eontrol limits. Outside eontrol limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,1,2,2-Tetrachloroethane, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,4-Diehlorobenzene, 1,4-Dioxane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, eis-1,3-Dichloropropene, Isopropylbenzene, Naphthalene, trans-1,3-Dichloropropene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MC3417-6 has internal standards outside control limits due to possible matrix interference. Confirmed by reanalysis.
- MSV85-BS/MS/MSD for Aerolein, Acrylonitrile: Outside control limits. Associated samples are non-deteet for this compound.

| Matrix SO | Batch ID: MSV87 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3762-3MS, MC3762-3MSD were used as the QC samples indicated.
- All method blanks for this bateh meet method specific criteria.
- Blank Spike Reeovery(s) for Aeetone are outside control limits. Blank Spike meets program technieal requirements.
- Matrix Spike Recovery(s) for 2-Hexanone, Acetone are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Reeovery(s) for 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acetone are outside eontrol limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSV87-BS/MS/MSD for Acrolein, Acrylonitrile: Outside eontrol limits. Associated samples are non-detect for this compound.

## Volatiles by GC By Method SW846 8015

| Matrix SO | Batch ID: GBH1310 |
|---|---|

- All samples were analyzed within the reeommended method holding time.
- All method blanks for this batch meet method specifie criteria.
- Sampie(s) MC3417-1MS, MC3417-1MSD were used as the QC samples indicated.

## Extractables by GC By Method SW846-8015

| Matrix SO | Batch ID: OP26262 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within thc recommended method holding time.
- Sample(s) MC3492-6MS, MC3492-6MSD were used as thc QC samples indicated.
- All method blanks for this bateh meet method specific criteria.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix | SO | Batch ID: | GN36078 |
|---|---|---|---|

- Sample(s) MC3417-1DUP were used as the QC samples for Solids, Percent.

The Aceutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC3417).

New England ACCUTEST LABORATORIES

3

Sample Results

Report of Analysis

# Report of Analysis



3.1

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-41(10-12.5)-090811 | | |
| Lab Sample ID: | MC3417-1 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 96.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V1793.D | 1 | 09/13/11 | AMY | n/a | n/a | MSV78 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.66 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~22.6~~ U | ~~5.6~~ 22 | 1.3 | ug/kg | U |
| 107-02-8 | Acrolein | ND | 28 | 19 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.6 | 2.2 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.56 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.6 | 0.21 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.6 | 1.2 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.2 | 0.23 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.2 | 0.53 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.2 | 0.75 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.6 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.6 | 1.4 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.6 | 0.18 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.6 | 0.73 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.6 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.2 | 0.25 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.2 | 0.10 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.6 | 0.29 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.6 | 5.6 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.2 | 0.17 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.6 | 0.24 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.6 | 0.16 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.6 | 1.2 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.6 | 5.6 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.2 | 0.73 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.2 | 0.21 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.2 | 0.17 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.2 | 0.38 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.2 | 0.17 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.2 | 0.16 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.2 | 0.35 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-41(10-12.5)-090811 | | |
| Lab Sample ID: | MC3417-1 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 96.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.2 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.2 | 0.28 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.2 | 0.25 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.6 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.6 | 0.21 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.6 | 0.21 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.2 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.2 | 0.76 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 28 | 28 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.6 | 3.5 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.2 | 0.14 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.6 | 5.6 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.6 | 1.2 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.6 | 0.18 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.6 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.2 | 0.69 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.6 | 0.94 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.6 | 0.34 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.2 | 0.40 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.6 | 5.6 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.6 | 0.18 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.6 | 0.56 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.6 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.2 | 0.19 | ug/kg | |
| 108-88-3 | Toluene | 0.72 | 5.6 | 0.20 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.6 | 1.2 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.6 | 5.6 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.2 | 0.28 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.2 | 0.22 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.2 | 1.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.6 | 0.23 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.6 | 0.18 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.6 | 0.20 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.6 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.2 | 0.72 | ug/kg | |
| | m,p-Xylene | ND | 2.2 | 0.28 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.2 | 0.21 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.2 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-41(10-12.5)-090811 | | |
| Lab Sample ID: | MC3417-1 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 96.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 102% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 106% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 81% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.1

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-41(10-12.5)-090811 | | |
| Lab Sample ID: | MC3417-1 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8015 | Percent Solids: | 96.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH23823.D | 1 | 09/12/11 | AF | n/a | n/a | GBH1310 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.56 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 12 | 8.4 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 97% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-41(10-12.5)-090811 | | |
| Lab Sample ID: | MC3417-1 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 96.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31021.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.3 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | 12 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 68% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-41(20-22.5)-090811 | | |
| Lab Sample ID: | MC3417-2 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 97.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V1794.D | 1 | 09/13/11 | AMY | n/a | n/a | MSV78 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.74 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.4 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 27 | 18 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.4 | 2.2 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.54 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.4 | 0.21 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.4 | 1.1 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.2 | 0.23 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.2 | 0.51 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.2 | 0.73 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.4 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.4 | 1.4 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.4 | 0.18 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.4 | 0.71 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.4 | 1.0 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.2 | 0.24 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.2 | 0.10 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.4 | 0.28 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.4 | 5.4 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.2 | 0.16 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.4 | 0.23 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.4 | 0.15 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.4 | 1.2 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.4 | 5.4 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.2 | 0.70 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.2 | 0.21 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.2 | 0.15 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.2 | 0.37 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.2 | 0.16 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.2 | 0.16 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.2 | 0.34 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-41(20-22.5)-090811 | | |
| Lab Sample ID: | MC3417-2 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 97.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.2 | 0.29 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.2 | 0.27 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.2 | 0.25 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.4 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.4 | 0.20 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.4 | 0.21 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.2 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.2 | 0.74 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 27 | 27 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.4 | 3.4 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.2 | 0.14 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.4 | 5.4 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.4 | 1.1 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.4 | 0.17 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.4 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.2 | 0.67 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.4 | 0.91 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.4 | 0.33 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.2 | 0.39 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.4 | 5.4 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.4 | 0.17 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.4 | 0.54 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.4 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.2 | 0.19 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.2 | 0.18 | ug/kg | |
| 108-88-3 | Toluene | 1.6 | 5.4 | 0.19 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.4 | 1.2 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.4 | 5.4 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.2 | 0.28 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.2 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.2 | 1.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.4 | 0.23 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.4 | 0.17 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.4 | 0.20 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.4 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.2 | 0.70 | ug/kg | |
| | m,p-Xylene | ND | 2.2 | 0.27 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.2 | 0.20 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.2 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP-41(20-22.5)-090811 | | |
| **Lab Sample ID:** | MC3417-2 | **Date Sampled:** | 09/08/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/09/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | 97.4 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

**VOA Special List**

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 91% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 82% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-41(20-22.5)-090811 | | |
| Lab Sample ID: | MC3417-2 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8015 | Percent Solids: | 97.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH23830.D | 1 | 09/12/11 | AF | n/a | n/a | GBH1310 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.49 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 12 | 8.4 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 93% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-41(20-22.5)-090811 | | |
| Lab Sample ID: | MC3417-2 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 97.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31022.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.8 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 16 | 11 | mg/kg | |
| | TPH (>C28-C40) | ND | 16 | 11 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 72% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-21(30-32)-090811 | | |
| Lab Sample ID: | MC3417-3 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 95.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V1795.D | 1 | 09/13/11 | AMY | n/a | n/a | MSV78 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.81 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.5 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 27 | 18 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.5 | 2.2 | ug/kg | |
| 71-43-2 | Benzene | 0.38 | 0.55 | 0.14 | ug/kg | J |
| 108-86-1 | Bromobenzene | ND | 5.5 | 0.21 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.5 | 1.1 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.2 | 0.23 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.2 | 0.52 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.2 | 0.74 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.5 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.5 | 1.4 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.5 | 0.18 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.5 | 0.71 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.5 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.2 | 0.25 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.2 | 0.10 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.5 | 0.28 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.5 | 5.5 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.2 | 0.16 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.5 | 0.24 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.5 | 0.15 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.5 | 1.2 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.5 | 5.5 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.2 | 0.71 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.2 | 0.21 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.2 | 0.15 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.2 | 0.37 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.2 | 0.17 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.2 | 0.16 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.2 | 0.35 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-21(30-32)-090811 | | |
| Lab Sample ID: | MC3417-3 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 95.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.2 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.2 | 0.28 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.2 | 0.25 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.5 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.5 | 0.20 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.5 | 0.21 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.2 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.2 | 0.75 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 27 | 27 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.5 | 3.4 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.2 | 0.14 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.5 | 5.5 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.5 | 1.1 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.5 | 0.17 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.5 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.2 | 0.68 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.5 | 0.92 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.5 | 0.33 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.2 | 0.39 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.5 | 5.5 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.5 | 0.18 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.5 | 0.55 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.5 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.2 | 0.19 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.2 | 0.18 | ug/kg | |
| 108-88-3 | Toluene | 2.4 | 5.5 | 0.20 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.5 | 1.2 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.5 | 5.5 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.2 | 0.28 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.2 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.2 | 1.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.5 | 0.23 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.5 | 0.17 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.5 | 0.20 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.5 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.2 | 0.70 | ug/kg | |
| | m,p-Xylene | ND | 2.2 | 0.27 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.2 | 0.20 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.2 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-21(30-32)-090811 | | |
| Lab Sample ID: | MC3417-3 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 95.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 110% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 92% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-21(30-32)-090811 | | |
| Lab Sample ID: | MC3417-3 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8015 | Percent Solids: | 95.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH23831.D | 1 | 09/12/11 | AF | n/a | n/a | GBH1310 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.86 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 11 | 8.0 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 89% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | SVE-21(30-32)-090811 | | |
| **Lab Sample ID:** | MC3417-3 | **Date Sampled:** | 09/08/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/09/11 |
| **Method:** | SW846-8015 SW846 3546 | **Percent Solids:** | 95.1 |
| **Project:** | URSMOSTL:Roxana SVE InstalI 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31024.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.6 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | 12 | mg/kg | |
| | TPH ( > C28-C40) | ND | 17 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 60% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-22(30-32)-090811 | | |
| Lab Sample ID: | MC3417-4 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 87.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V1992.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV87 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.63 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 6.2 | 1.4 | ug/kg | |
| 107-02-8 | Acrolein | ND | 31 | 21 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6.2 | 2.5 | ug/kg | |
| 71-43-2 | Benzene | 30.3 | 0.62 | 0.15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 6.2 | 0.24 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6.2 | 1.3 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.5 | 0.26 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.5 | 0.58 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.5 | 0.84 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 6.2 | 1.5 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 6.2 | 1.6 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 6.2 | 0.20 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 6.2 | 0.81 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 6.2 | 1.2 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.5 | 0.28 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.5 | 0.12 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6.2 | 0.32 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6.2 | 6.2 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.5 | 0.18 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6.2 | 0.27 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 6.2 | 0.17 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6.2 | 1.4 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6.2 | 6.2 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.5 | 0.81 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.5 | 0.24 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.5 | 0.19 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.5 | 0.18 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.5 | 0.17 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.5 | 0.42 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.5 | 0.19 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.5 | 0.18 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.5 | 0.39 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-22(30-32)-090811 | | |
| Lab Sample ID: | MC3417-4 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 87.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.5 | 0.33 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.5 | 0.31 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.5 | 0.28 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6.2 | 1.4 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6.2 | 0.23 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6.2 | 0.24 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.5 | 1.2 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.5 | 0.85 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 31 | 31 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6.2 | 3.9 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.5 | 0.16 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 6.2 | 6.2 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6.2 | 1.3 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 6.2 | 0.20 | ug/kg | |
| 99-87-6 | p-Isopropyltolueue | ND | 6.2 | 0.20 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.5 | 0.77 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6.2 | 1.0 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6.2 | 0.38 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.5 | 0.45 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 6.2 | 6.2 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 6.2 | 0.20 | ug/kg | |
| 100-42-5 | Styrene | ND | 6.2 | 0.62 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6.2 | 1.2 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.5 | 0.22 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.5 | 0.21 | ug/kg | |
| 108-88-3 | Toluene | 3.2 | 6.2 | 0.22 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6.2 | 1.4 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6.2 | 6.2 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.5 | 0.23 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.5 | 0.31 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.5 | 0.24 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.5 | 1.1 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6.2 | 0.26 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 6.2 | 0.19 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 6.2 | 0.22 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 6.2 | 1.5 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.5 | 0.80 | ug/kg | |
| | m,p-Xylene | ND | 2.5 | 0.31 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.5 | 0.23 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.5 | 0.16 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-22(30-32)-090811 | | |
| Lab Sample ID: | MC3417-4 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 87.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 103% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-22(30-32)-090811 | | |
| Lab Sample ID: | MC3417-4 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8015 | Percent Solids: | 87.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH23832.D | 1 | 09/12/11 | AF | n/a | n/a | GBH1310 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.95 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 12 | 8.9 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 83% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.4

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-22(30-32)-090811 | | |
| Lab Sample ID: | MC3417-4 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 87.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31035.D | 1 | 09/22/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.6 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 18 | 13 | mg/kg | |
| | TPH ( > C28-C40) | ND | 18 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 77% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.5

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-43(9-10)-090811 | | |
| Lab Sample ID: | MC3417-5 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 86.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V1964.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.18 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~188~~ U | ~~5.6~~ 188 | 1.3 | ug/kg | U |
| 107-02-8 | Acrolein | ND | 28 | 19 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.6 | 2.2 | ug/kg | |
| 71-43-2 | Benzene | 120 | 0.56 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.6 | 0.21 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.6 | 1.2 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.2 | 0.23 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.2 | 0.52 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.2 | 0.75 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.6 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.6 | 1.4 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.6 | 0.18 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.6 | 0.72 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.6 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.2 | 0.25 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.2 | 0.10 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.6 | 0.29 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.6 | 5.6 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.2 | 0.16 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.6 | 0.24 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.6 | 0.16 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.6 | 1.2 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.6 | 5.6 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.2 | 0.72 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.2 | 0.21 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.2 | 0.17 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.2 | 0.38 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.2 | 0.17 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.2 | 0.16 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.2 | 0.35 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-43(9-10)-090811 | | |
| Lab Sample ID: | MC3417-5 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 86.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.2 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.2 | 0.28 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.2 | 0.25 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.6 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.6 | 0.20 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.6 | 0.21 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.2 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.2 | 0.76 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 28 | 28 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.6 | 3.5 | ug/kg | |
| 100-41-4 | Ethylbenzene | 50.1 | 2.2 | 0.14 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.6 | 5.6 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.6 | 1.2 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 3.0 | 5.6 | 0.18 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | ND | 5.6 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.2 | 0.69 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.6 | 0.93 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.6 | 0.34 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.2 | 0.40 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.6 | 5.6 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 7.3 | 5.6 | 0.18 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.6 | 0.56 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.6 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.2 | 0.19 | ug/kg | |
| 108-88-3 | Toluene | 40.0 | 5.6 | 0.20 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.6 | 1.2 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.6 | 5.6 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.2 | 0.28 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.2 | 0.22 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.2 | 1.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.6 | 0.23 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 30.7 | 5.6 | 0.17 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 8.7 | 5.6 | 0.20 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.6 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.2 | 0.71 | ug/kg | |
| | m,p-Xylene | 121 | 2.2 | 0.28 | ug/kg | |
| 95-47-6 | o-Xylene | 20.8 | 2.2 | 0.21 | ug/kg | |
| 1330-20-7 | Xylene (total) | 142 | 2.2 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.5

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-43(9-10)-090811 | | |
| Lab Sample ID: | MC3417-5 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 86.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 93% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 102% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP-43(9-10)-090811 | | |
| **Lab Sample ID:** | MC3417-5 | **Date Sampled:** | 09/08/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/09/11 |
| **Method:** | SW846 8015 | **Percent Solids:** | 86.9 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH23834.D | 1 | 09/12/11 | AF | n/a | n/a | GBH1310 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.86 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 13 | 9.1 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 87% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.5

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-43(9-10)-090811 | | |
| Lab Sample ID: | MC3417-5 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 86.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31036.D | 1 | 09/22/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.5 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 19 | 14 | mg/kg | |
| | TPH (>C28-C40) | ND | 19 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 82% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-23(24-26)-090811 | | |
| Lab Sample ID: | MC3417-6 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 83.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V1965.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| Run #2 [a] | E55702.D | 1 | 09/22/11 | GK | n/a | n/a | MSE2261 |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #I | 5.61 g | 5.0 ml | |
| Run #2 | 5.58 g | 10.0 ml | 100 ul |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.3 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 27 | 18 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.3 | 2.1 | ug/kg | |
| 71-43-2 | Benzene | 4.2 | 0.53 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.3 | 0.20 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.3 | 1.1 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.1 | 0.22 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.1 | 0.50 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.1 | 0.72 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.3 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.3 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.3 | 0.18 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.3 | 0.69 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.3 | 1.0 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.1 | 0.24 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.1 | 0.10 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.3 | 0.28 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.3 | 5.3 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.1 | 0.16 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.3 | 0.23 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.3 | 0.15 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.3 | 1.2 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.3 | 5.3 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.1 | 0.69 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.1 | 0.20 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.1 | 0.16 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.1 | 0.15 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.1 | 0.15 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.1 | 0.36 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.1 | 0.16 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.1 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.1 | 0.34 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-23(24-26)-090811 | | |
| Lab Sample ID: | MC3417-6 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 83.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.1 | 0.29 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.1 | 0.27 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.1 | 0.24 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.3 | 1.2 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.3 | 0.20 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.3 | 0.20 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.1 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.1 | 0.73 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 27 | 27 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.3 | 3.3 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.1 | 0.14 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.3 | 5.3 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.3 | 1.1 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.3 | 0.17 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.3 | 0.17 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.1 | 0.66 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.3 | 0.89 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.3 | 0.33 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.1 | 0.38 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.3 | 5.3 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.3 | 0.17 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.3 | 0.53 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.3 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.1 | 0.19 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.1 | 0.18 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.3 | 0.19 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.3 | 1.2 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.3 | 5.3 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.1 | 0.19 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.1 | 0.27 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.1 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.1 | 0.98 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.3 | 0.22 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.3 | 0.17 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.3 | 0.19 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.3 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.1 | 0.69 | ug/kg | |
| | m,p-Xylene | ND | 2.1 | 0.27 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.1 | 0.20 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.1 | 0.13 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-23(24-26)-090811 | | |
| Lab Sample ID: | MC3417-6 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 83.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 103% | 98% | 70-130% |
| 2037-26-5 | Toluene-D8 | 93% | 108% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 88% | 98% | 70-130% |

(a) Confirmation run.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | SVE-23(24-26)-090811 | | |
| **Lab Sample ID:** | MC3417-6 | **Date Sampled:** | 09/08/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/09/11 |
| **Method:** | SW846 8015 | **Percent Solids:** | 83.7 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH23835.D | 1 | 09/12/11 | AF | n/a | n/a | GBH1310 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.12 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 13 | 9.2 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 91% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte fonnd in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | SVE-23(24-26)-090811 | | |
| **Lab Sample ID:** | MC3417-6 | **Date Sampled:** | 09/08/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/09/11 |
| **Method:** | SW846-8015 SW846 3546 | **Percent Solids:** | 83.7 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31031.D | 1 | 09/22/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.5 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 19 | 14 | mg/kg | |
| | TPH (>C28-C40) | ND | 19 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 67% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-27(30-32)-090711 | | |
| Lab Sample ID: | MC3417-7 | Date Sampled: | 09/07/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 95.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V1959.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.82 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.4 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 27 | 18 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.4 | 2.2 | ug/kg | |
| 71-43-2 | Benzene | 222 | 0.54 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.4 | 0.21 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.4 | 1.1 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.2 | 0.23 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.2 | 0.51 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.2 | 0.73 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.4 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.4 | 1.4 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.4 | 0.18 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.4 | 0.71 | ug/kg | |
| 75-15-0 | Carbon disulfide | 2.1 | 5.4 | 1.0 | ug/kg | J |
| 56-23-5 | Carbon tetrachloride | ND | 2.2 | 0.24 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.2 | 0.10 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.4 | 0.28 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.4 | 5.4 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.2 | 0.16 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.4 | 0.23 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.4 | 0.15 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.4 | 1.2 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.4 | 5.4 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.2 | 0.70 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.2 | 0.21 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.2 | 0.15 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.2 | 0.37 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.2 | 0.16 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.2 | 0.16 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.2 | 0.34 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-27(30-32)-090711 | | |
| Lab Sample ID: | MC3417-7 | Date Sampled: | 09/07/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 95.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.2 | 0.29 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.2 | 0.27 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.2 | 0.25 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.4 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.4 | 0.20 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.4 | 0.21 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.2 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.2 | 0.74 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 27 | 27 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.4 | 3.4 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.2 | 0.14 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.4 | 5.4 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.4 | 1.1 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.4 | 0.17 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.4 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.2 | 0.67 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.4 | 0.91 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.4 | 0.33 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.2 | 0.39 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.4 | 5.4 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.4 | 0.17 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.4 | 0.54 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.4 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.2 | 0.19 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.2 | 0.18 | ug/kg | |
| 108-88-3 | Toluene | 1.9 | 5.4 | 0.19 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.4 | 1.2 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.4 | 5.4 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.2 | 0.28 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.2 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.2 | 1.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.4 | 0.23 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.4 | 0.17 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.4 | 0.20 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.4 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.2 | 0.70 | ug/kg | |
| | m,p-Xylene | ND | 2.2 | 0.27 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.2 | 0.20 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.2 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-27(30-32)-090711 | | |
| Lab Sample ID: | MC3417-7 | Date Sampled: | 09/07/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 95.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-27(30-32)-090711 | | |
| Lab Sample ID: | MC3417-7 | Date Sampled: | 09/07/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8015 | Percent Solids: | 95.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH23836.D | 1 | 09/13/11 | AF | n/a | n/a | GBH1310 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.83 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 9.2 | 6.7 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 89% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-27(30-32)-090711 | | |
| Lab Sample ID: | MC3417-7 | Date Sampled: | 09/07/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 95.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31029.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.5 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | 12 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 65% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-24(30-34)-090711 | | |
| Lab Sample ID: | MC3417-8 | Date Sampled: | 09/07/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 84.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | E55539.D | 1 | 09/13/11 | GK | n/a | n/a | MSE2258 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.20 g | 10.0 ml | 20.0 ul |
| Run #2 | | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 3100 | 720 | ug/kg | |
| 107-02-8 | Acrolein | ND | 15000 | 10000 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 3100 | 1200 | ug/kg | |
| 71-43-2 | Benzene | 55600 | 310 | 77 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 3100 | 120 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 3100 | 640 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 1200 | 130 | ug/kg | |
| 75-25-2 | Bromoform | ND | 1200 | 290 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 1200 | 420 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 3100 | 740 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 3100 | 780 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 3100 | 100 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 3100 | 400 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 3100 | 600 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 1200 | 140 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 1200 | 58 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 3100 | 160 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 3100 | 3100 | ug/kg | |
| 67-66-3 | Chloroform | ND | 1200 | 92 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 3100 | 130 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 3100 | 87 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 3100 | 690 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 3100 | 3100 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 1200 | 400 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 1200 | 120 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1200 | 93 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1200 | 89 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1200 | 87 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 1200 | 210 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1200 | 94 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1200 | 90 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1200 | 200 | ug/kg | |

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-24(30-34)-090711 | | |
| Lab Sample ID: | MC3417-8 | Date Sampled: | 09/07/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 84.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1200 | 170 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1200 | 160 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 1200 | 140 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 3100 | 720 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 3100 | 110 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 3100 | 120 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1200 | 620 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1200 | 420 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 15000 | 15000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 3100 | 1900 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 1200 | 80 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 3100 | 3100 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 3100 | 650 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 3100 | 98 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 3100 | 100 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1200 | 380 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 3100 | 520 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 3100 | 190 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 1200 | 220 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 3100 | 3100 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 3100 | 100 | ug/kg | |
| 100-42-5 | Styrene | ND | 3100 | 310 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 3100 | 620 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1200 | 110 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 1200 | 100 | ug/kg | |
| 108-88-3 | Toluene | ND | 3100 | 110 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 3100 | 680 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 3100 | 3100 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1200 | 110 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1200 | 160 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 1200 | 120 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 1200 | 570 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 3100 | 130 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 451 | 3100 | 97 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 200 | 3100 | 110 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 3100 | 730 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 1200 | 400 | ug/kg | |
| | m,p-Xylene | ND | 1200 | 160 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 1200 | 110 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 1200 | 78 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.8

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-24(30-34)-090711 | | |
| Lab Sample ID: | MC3417-8 | Date Sampled: | 09/07/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 84.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 96% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 108% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 105% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-24(30-34)-090711 | | |
| Lab Sample ID: | MC3417-8 | Date Sampled: | 09/07/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8015 | Percent Solids: | 84.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH23837.D | 1 | 09/13/11 | AF | n/a | n/a | GBH1310 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.20 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 83.2 | 12 | 9.0 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 98% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-24(30-34)-090711 | | |
| Lab Sample ID: | MC3417-8 | Date Sampled: | 09/07/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 84.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31030.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.5 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 49.2 | 19 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 19 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 65% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.9

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-42(9-10)-090811 | | |
| Lab Sample ID: | MC3417-9 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 92.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V1966.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.12 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~52.5~~ U | ~~6.6~~ 52.5 | 1.5 | ug/kg | U |
| 107-02-8 | Acrolein | ND | 33 | 22 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6.6 | 2.6 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.66 | 0.16 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 6.6 | 0.25 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6.6 | 1.4 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.6 | 0.28 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.6 | 0.62 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.6 | 0.89 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 6.6 | 1.6 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 6.6 | 1.7 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 6.6 | 0.22 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 6.6 | 0.86 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 6.6 | 1.3 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.6 | 0.29 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.6 | 0.12 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6.6 | 0.34 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6.6 | 6.6 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.6 | 0.19 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6.6 | 0.28 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 6.6 | 0.18 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6.6 | 1.5 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6.6 | 6.6 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.6 | 0.85 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.6 | 0.25 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.6 | 0.20 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.6 | 0.19 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.6 | 0.18 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.6 | 0.45 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.6 | 0.20 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.6 | 0.19 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.6 | 0.42 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-42(9-10)-090811 | | |
| Lab Sample ID: | MC3417-9 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 92.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.6 | 0.36 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.6 | 0.33 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.6 | 0.30 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6.6 | 1.5 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6.6 | 0.24 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6.6 | 0.25 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.6 | 1.3 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.6 | 0.90 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 33 | 33 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6.6 | 4.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.6 | 0.17 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 6.6 | 6.6 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6.6 | 1.4 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 6.6 | 0.21 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 6.6 | 0.21 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.6 | 0.81 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6.6 | 1.1 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6.6 | 0.40 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.6 | 0.47 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 6.6 | 6.6 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 6.6 | 0.21 | ug/kg | |
| 100-42-5 | Styrene | ND | 6.6 | 0.66 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6.6 | 1.3 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.6 | 0.23 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.6 | 0.22 | ug/kg | |
| 108-88-3 | Toluene | 2.2 | 6.6 | 0.23 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6.6 | 1.4 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6.6 | 6.6 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.6 | 0.24 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.6 | 0.33 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.6 | 0.26 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.6 | 1.2 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6.6 | 0.28 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 6.6 | 0.21 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 6.6 | 0.24 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 6.6 | 1.5 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.6 | 0.84 | ug/kg | |
| | m,p-Xylene | ND | 2.6 | 0.33 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.6 | 0.24 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.6 | 0.17 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-42(9-10)-090811 | | |
| Lab Sample ID: | MC3417-9 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 92.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-42(9-10)-090811 | | |
| Lab Sample ID: | MC3417-9 | Date Sampled: | 09/08/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8015 | Percent Solids: | 92.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH23838.D | 1 | 09/13/11 | AF | n/a | n/a | GBH1310 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.03 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 14 | 10 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 90% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP-42(9-10)-090811 | | |
| **Lab Sample ID:** | MC3417-9 | **Date Sampled:** | 09/08/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/09/11 |
| **Method:** | SW846-8015 SW846 3546 | **Percent Solids:** | 92.4 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31033.D | 1 | 09/22/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.5 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | 12 | mg/kg | |
| | TPH (> C28-C40) | ND | 17 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 82% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-26(30-32)-090711 | | |
| Lab Sample ID: | MC3417-10 | Date Sampled: | 09/07/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 82.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | E55540.D | 1 | 09/13/11 | GK | n/a | n/a | MSE2258 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.24 g | 10.0 ml | 25.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 2500 | 590 | ug/kg | |
| 107-02-8 | Acrolein | ND | 13000 | 8600 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 2500 | 1000 | ug/kg | |
| 71-43-2 | Benzene | 29300 | 250 | 64 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 2500 | 97 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 2500 | 530 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 1000 | 110 | ug/kg | |
| 75-25-2 | Bromoform | ND | 1000 | 240 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 1000 | 340 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 2500 | 610 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 2500 | 640 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 2500 | 84 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 2500 | 330 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 2500 | 490 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 1000 | 110 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 1000 | 48 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 2500 | 130 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 2500 | 2500 | ug/kg | |
| 67-66-3 | Chloroform | ND | 1000 | 76 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 2500 | 110 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 2500 | 71 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 2500 | 570 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 2500 | 2500 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 1000 | 330 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 1000 | 97 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1000 | 77 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1000 | 74 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1000 | 71 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 1000 | 170 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1000 | 78 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1000 | 74 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1000 | 160 | ug/kg | |

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N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-26(30-32)-090711 | | |
| Lab Sample ID: | MC3417-10 | Date Sampled: | 09/07/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 82.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1000 | 140 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1000 | 130 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 1000 | 120 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 2500 | 590 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 2500 | 94 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 2500 | 98 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1000 | 510 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1000 | 350 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 13000 | 13000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 2500 | 1600 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 1000 | 66 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 2500 | 2500 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 2500 | 530 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 2500 | 81 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 2500 | 83 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1000 | 320 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (M1BK) | ND | 2500 | 430 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 2500 | 160 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 1000 | 180 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 2500 | 2500 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 2500 | 82 | ug/kg | |
| 100-42-5 | Styrene | ND | 2500 | 250 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 2500 | 510 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1000 | 90 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 1000 | 86 | ug/kg | |
| 108-88-3 | Toluene | ND | 2500 | 91 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 2500 | 560 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 2500 | 2500 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1000 | 93 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1000 | 130 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 1000 | 100 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 1000 | 470 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 2500 | 110 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 2500 | 80 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 2500 | 93 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 2500 | 600 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 1000 | 330 | ug/kg | |
| | m,p-Xylene | ND | 1000 | 130 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 1000 | 94 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 1000 | 64 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-26(30-32)-090711 | | |
| Lab Sample ID: | MC3417-10 | Date Sampled: | 09/07/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | 82.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 96% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 111% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 100% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-26(30-32)-090711 | | |
| Lab Sample ID: | MC3417-10 | Date Sampled: | 09/07/11 |
| Matrix: | SO - Soil | Date Received: | 09/09/11 |
| Method: | SW846 8015 | Percent Solids: | 82.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH23839.D | 1 | 09/13/11 | AF | n/a | n/a | GBH1310 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.30 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 19.3 | 13 | 9.1 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 89% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | SVE-26(30-32)-090711 | | |
| **Lab Sample ID:** | MC3417-10 | **Date Sampled:** | 09/07/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/09/11 |
| **Method:** | SW846-8015 SW846 3546 | **Percent Solids:** | 82.0 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31032.D | 1 | 09/22/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.7 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 19 | 14 | mg/kg | |
| | TPH (>C28-C40) | ND | 19 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 72% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB-090811 | | |
| Lab Sample ID: | MC3417-11 | Date Sampled: | 09/08/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M43470.D | 1 | 09/20/11 | TD | n/a | n/a | MSM1397 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | TB-090811 | | |
| Lab Sample ID: | MC3417-11 | Date Sampled: | 09/08/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/09/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.11

| | | | |
|---|---|---|---|
| **Client Sample ID:** | TB-090811 | | |
| **Lab Sample ID:** | MC3417-11 | **Date Sampled:** | 09/08/11 |
| **Matrix:** | AQ - Trip Blank Water | **Date Received:** | 09/09/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | n/a |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 95% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES



## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

# Shell Oil Products Chain Of Custody Record

URS

LAB (LOCATION)
- ☐ XENCO ( )
- ☐ CALSCIENCE ( )
- ☑ OTHER Accutest Labs; 495 Technology Ctr W
- ☐ SPL ( ) Lab Vendor # ( )

Lab Vendor #

Please Check Appropriate Box:
- ☑ ENV. SERVICES
- ☐ MOTIVA RETAIL
- ☐ SHELL RETAIL
- ☐ MOTIVA SD&CM
- ☐ CONSULTANT
- ☐ LUBES
- ☐ SHELL PIPELINE
- ☐ OTHER

Print Bill To Contact Name: Jeff Adams

PO #

INCIDENT # (ENV SERVICES): 9 7 2 1 5 6 4 0

SAP #: 3 4 0 0 8 1

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 9/08/11

PAGE: 1 of 2

SAMPLING COMPANY: URS CORPORATION

LOG CODE:

SITE ADDRESS: Street and City: 170 EAST RAND AVENUE -- HARTFORD

State: IL

GLOBAL ID NO:

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110

CDF DELIVERABLE TO (Name, Company, Office Location):

PHONE NO:

EMAIL:

CONSULTANT PROJECT NO.: Roxana SVE Install 2011 / 21582593.00014

PROJECT CONTACT (Attention or Post Address): Elizabeth Kunkel

TELEPHONE: 314-743-4179

FAX: 314-429-0462

BILL TO Contact E-mail: elizabeth_kunkel@urscorp.com

SAMPLER NAME(S) (Print): Dkip Wightson / Mike Miller

LAB USE ONLY: MC3417

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 3 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

REQUESTED ANALYSIS

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY*

DELIVERABLES ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C° Cooler #1 Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
- * Please include "J" values on Reports.
- * Please provide sample receipt upon login.

- ☑ SHELL CONTRACT RATE APPLIES
- ☐ STATE REIMBURSEMENT RATE APPLIES
- ☐ EDD NOT NEEDED
- ☑ RECEIPT VERIFICATION REQUESTED
- ☐ PROVIDE LEDD DISK

FIELD NOTES:

TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE HCL | HNO3 | H2SO4 | CHOCK | NaHSO4 | NONE | OTHER | # of Cont | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | VMP-41 (10-12.5) 090811 | 090811 | 1610 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 2 | VMP-41 (20-22.5) 090811 | 090811 | 1615 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 3 | SVE-21 (30-32) 090811 | 090811 | 1327 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 4 | SVE-22 (30-32) 090811 | 090811 | 1130 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 5 | VMP 43 (9-10) 090811 | 090811 | 1430 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 6 | SVE-23 (24-26) 090811 | 090811 | 0930 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 7 | SVE 27 (30-32) 090711 | 090711 | 1510 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 8 | SVE-24 (32-34) 090711 | 090711 | 1315 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 9 | VMP 42 (9-10) 090811 | 090811 | 1535 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | 8C, 10E6 |
| 10 | SVE-26 (30-32) 090711 | 090711 | 1410 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |

| Relinquished by (Signature) | Received by (Signature) | Date | Time |
|---|---|---|---|
| [signature] 09/08/11 1800 | FedEx | | |
| FedEx | [signature] | 9/9/11 | 9:30 |
| | | | 1-7 |

05/2/00 Revision

MC3417: Chain of Custody
Page 1 of 3

# Shell Oil Products Chain Of Custody Record

URS

LAB (LOCATION)
- ☐ XENCO ( )
- ☐ CALSCIENCE ( )
- ☑ OTHER Accutest Labs; 495 Technology Ctr W
- ☐ Lab Vendor # ( )
- ☐ SM. ( )

Lab Vendor #

Please Check Appropriate Box:
- ☑ ENV. SERVICES
- ☐ MOTIVA RETAIL
- ☐ SHELL RETA
- ☐ MOTIVA SD&CH
- ☐ CONSULTANT
- ☐ LUBES
- ☐ SHELL PIPELINE
- ☐ OTHER

Print Bill To Contact Name: Jeff Adams

PO #

INCIDENT # (ENV SERVICES): 9 7 2 1 6 8 4 0

SAP #: 3 4 0 0 6 1

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 9/8/11

PAGE: 2 of 2

SAMPLING COMPANY: URS CORPORATION

LOG CODE:

SITE ADDRESS, Street and City: 170 EAST RAND AVENUE – HARTFORD

State: IL

GLOBAL ID NO:

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300; ST. LOUIS, MO 63110

EDF DELIVERABLE TO (Name, Company, Office Location):

PHONE NO:

E-MAIL:

CONSULTANT PROJECT NO: Roxana SVE Install 2011 / 21562593.00014

PROJECT CONTACT (Hardcopy or PDF Report to): Elizabeth Kunkel

TELEPHONE: 314-743-4179

FAX: 314-429-0462

Bill To Contact E-MAIL: elizabeth_kunkel@urscorp.com

SAMPLER Name(s) (Print): Skip Vrightson / Mike Miller

LAB USE ONLY: MC3417

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

REQUESTED ANALYSIS

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY.

DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C°: Cooler #1 | Cooler #2 | Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
- * Please include "J" values on Reports.
- * Please provide sample receipt upon login.

- ☑ SHELL CONTRACT RATE APPLIES
- ☐ STATE REIMBURSEMENT RATE APPLIES
- ☐ EDD NOT NEEDED
- ☑ RECEIPT VERIFICATION REQUESTED
- ☐ PROVIDE LEDD DISK

FIELD NOTES:

TEMPERATURE ON RECEIPT C°:

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE HCL | HNO3 | H2SO4 | CH3OH | NaHSO4 | NONE | OTHER | # of Cont. | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -11 | ~~TRIP~~ TB-090811 | 090811 | — | Water | | | | 2 | 2 | 2 | | 6 | X | X | | |
| | | | | | | | | | | | | | | | | 8C |

| Relinquished by (Signature) | Received by (Signature) | Date | Time |
|---|---|---|---|
| [signature] 09/08/11 1800 | FedEx | | |
| FedEx | [signature] | 9/9/11 | 9:30 |
| | | | 17 |

05/2/00 Revision

MC3417: Chain of Custody
Page 2 of 3

ACCUTEST LABORATORIES

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC3417 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 9/9/2011 Delivery Method: Client Service Action Required at Login: No

Project: 170 EAST RAND AVE HARTFORD IL No. Coolers: 1 Airbill #'s: N/A

| Cooler Security | Y | or | N | | Y | or | N |
|---|---|---|---|---|---|---|---|
| 1. Custody Seals Present: | ☑ | | ☐ | 3. COC Present: | ☑ | | ☐ |
| 2. Custody Seals Intact: | ☑ | | ☐ | 4. Smpl Dates/Time OK | ☑ | | ☐ |

| Cooler Temperature | Y | or | N |
|---|---|---|---|
| 1. Temp criteria achieved: | ☑ | | ☐ |
| 2. Cooler temp verification: | Infared gun | | |
| 3. Cooler media: | Ice (bag) | | |

| Quality Control Preservatio | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Trip Blank present / cooler: | ☐ | | ☐ | ☑ |
| 2. Trip Blank listed on COC: | ☐ | | ☐ | ☑ |
| 3. Samples preserved properly: | ☑ | | ☐ | |
| 4. VOCs headspace free: | ☑ | | ☐ | ☐ |

| Sample Integrity - Documentation | Y | or | N |
|---|---|---|---|
| 1. Sample labels present on bottles: | ☑ | | ☐ |
| 2. Container labeling complete: | ☑ | | ☐ |
| 3. Sample container label / COC agree: | ☑ | | ☐ |

| Sample Integrity - Condition | Y | or | N |
|---|---|---|---|
| 1. Sample recvd within HT: | ☑ | | ☐ |
| 2. All containers accounted for: | ☑ | | ☐ |
| 3. Condition of sample: | Intact | | |

| Sample Integrity - Instructions | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Analysis requested is clear: | ☑ | | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | | ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ | | ☐ | |
| 4. Compositing instructions clear: | ☐ | | ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ | | ☐ | ☑ |

Comments



4.1

4

**MC3417: Chain of Custody**
**Page 3 of 3**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3417

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3417-1 Collected: 08-SEP-11 16:00 By: KWMM Received: 09-SEP-11 By: JB<br>VMP-41(10-12.5)-090811 | | | | | | |
| MC3417-1 | SM21 2540 B MOD. | 12-SEP-11 | HS | | | %SOL |
| MC3417-1 | SW846 8015 | 12-SEP-11 15:38 | AF | | | V8015GRO |
| MC3417-1 | SW846 8260B | 13-SEP-11 17:52 | AMY | | | V8260SL |
| MC3417-1 | SW846-8015 | 21-SEP-11 16:37 | KD | 15-SEP-11 | MT | B8015DROORO |
| MC3417-2 Collected: 08-SEP-11 16:15 By: KWMM Received: 09-SEP-11 By: JB<br>VMP-41(20-22.5)-090811 | | | | | | |
| MC3417-2 | SM21 2540 B MOD. | 12-SEP-11 | HS | | | %SOL |
| MC3417-2 | SW846 8015 | 12-SEP-11 20:18 | AF | | | V8015GRO |
| MC3417-2 | SW846 8260B | 13-SEP-11 18:23 | AMY | | | V8260SL |
| MC3417-2 | SW846-8015 | 21-SEP-11 17:23 | KD | 15-SEP-11 | MT | B8015DROORO |
| MC3417-3 Collected: 08-SEP-11 13:27 By: KWMM Received: 09-SEP-11 By: JB<br>SVE-21(30-32)-090811 | | | | | | |
| MC3417-3 | SM21 2540 B MOD. | 12-SEP-11 | HS | | | %SOL |
| MC3417-3 | SW846 8015 | 12-SEP-11 20:59 | AF | | | V8015GRO |
| MC3417-3 | SW846 8260B | 13-SEP-11 18:54 | AMY | | | V8260SL |
| MC3417-3 | SW846-8015 | 21-SEP-11 18:54 | KD | 15-SEP-11 | MT | B8015DROORO |
| MC3417-4 Collected: 08-SEP-11 11:30 By: KWMM Received: 09-SEP-11 By: JB<br>SVE-22(30-32)-090811 | | | | | | |
| MC3417-4 | SM21 2540 B MOD. | 12-SEP-11 | HS | | | %SOL |
| MC3417-4 | SW846 8015 | 12-SEP-11 21:39 | AF | | | V8015GRO |
| MC3417-4 | SW846-8015 | 22-SEP-11 03:20 | KD | 15-SEP-11 | MT | B8015DROORO |
| MC3417-4 | SW846 8260B | 22-SEP-11 10:47 | AMY | | | V8260SL |
| MC3417-5 Collected: 08-SEP-11 14:30 By: KWMM Received: 09-SEP-11 By: JB<br>VMP-43(9-10)-090811 | | | | | | |
| MC3417-5 | SM21 2540 B MOD. | 12-SEP-11 | HS | | | %SOL |
| MC3417-5 | SW846 8015 | 12-SEP-11 22:58 | AF | | | V8015GRO |
| MC3417-5 | SW846 8260B | 21-SEP-11 15:12 | AMY | | | V8260SL |
| MC3417-5 | SW846-8015 | 22-SEP-11 04:05 | KD | 15-SEP-11 | MT | B8015DROORO |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3417

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3417-6 Collected: 08-SEP-11 09:30 By: KWMM Received: 09-SEP-11 By: JB<br>SVE-23(24-26)-090811 | | | | | | |
| MC3417-6 | SM21 2540 B MOD. | 12-SEP-11 | HS | | | %SOL |
| MC3417-6 | SW846 8015 | 12-SEP-11 23:38 | AF | | | V8015GRO |
| MC3417-6 | SW846 8260B | 21-SEP-11 15:42 | AMY | | | V8260SL |
| MC3417-6 | SW846-8015 | 22-SEP-11 00:16 | KD | 15-SEP-11 | MT | B8015DROORO |
| MC3417-6 | SW846 8260B | 22-SEP-11 13:16 | GK | | | V8260SL |
| MC3417-7 Collected: 07-SEP-11 15:00 By: KWMM Received: 09-SEP-11 By: JB<br>SVE-27(30-32)-090711 | | | | | | |
| MC3417-7 | SM21 2540 B MOD. | 12-SEP-11 | HS | | | %SOL |
| MC3417-7 | SW846 8015 | 13-SEP-11 00:17 | AF | | | V8015GRO |
| MC3417-7 | SW846 8260B | 21-SEP-11 12:41 | AMY | | | V8260SL |
| MC3417-7 | SW846-8015 | 21-SEP-11 22:44 | KD | 15-SEP-11 | MT | B8015DROORO |
| MC3417-8 Collected: 07-SEP-11 13:15 By: KWMM Received: 09-SEP-11 By: JB<br>SVE-24(30-34)-090711 | | | | | | |
| MC3417-8 | SM21 2540 B MOD. | 12-SEP-11 | HS | | | %SOL |
| MC3417-8 | SW846 8015 | 13-SEP-11 00:57 | AF | | | V8015GRO |
| MC3417-8 | SW846 8260B | 13-SEP-11 17:03 | GK | | | V8260SL |
| MC3417-8 | SW846-8015 | 21-SEP-11 23:30 | KD | 15-SEP-11 | MT | B8015DROORO |
| MC3417-9 Collected: 08-SEP-11 15:35 By: KWMM Received: 09-SEP-11 By: JB<br>VMP-42(9-10)-090811 | | | | | | |
| MC3417-9 | SM21 2540 B MOD. | 12-SEP-11 | HS | | | %SOL |
| MC3417-9 | SW846 8015 | 13-SEP-11 01:36 | AF | | | V8015GRO |
| MC3417-9 | SW846 8260B | 21-SEP-11 16:13 | AMY | | | V8260SL |
| MC3417-9 | SW846-8015 | 22-SEP-11 01:48 | KD | 15-SEP-11 | MT | B8015DROORO |
| MC3417-10 Collected: 07-SEP-11 14:10 By: KWMM Received: 09-SEP-11 By: JB<br>SVE-26(30-32)-090711 | | | | | | |
| MC3417-10 | SM21 2540 B MOD. | 12-SEP-11 | HS | | | %SOL |
| MC3417-10 | SW846 8015 | 13-SEP-11 02:16 | AF | | | V8015GRO |
| MC3417-10 | SW846 8260B | 13-SEP-11 17:32 | GK | | | V8260SL |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3417

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3417-10 | SW846-8015 | 22-SEP-11 01:02 | KD | 15-SEP-11 | MT | B8015DROORO |
| MC3417-11 | Collected: 08-SEP-11 00:00 By: KWMM | | Received: 09-SEP-11 By: JB | | | |
| TB-090811 | | | | | | |
| MC3417-11 | SW846 8260B | 20-SEP-11 20:37 | TD | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/09/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3417-1.1 | Walk In Ref #5 | Hamid Siamak | 09/12/11 08:27 | Retrieve from Storage |
| MC3417-I.1 | Hamid Siamak | Walk In Ref #5 | 09/12/11 09:44 | Return to Storage |
| MC3417-1.1 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-1.2 | Walk In Ref #5 | Mahmoud Afzali | 09/15/11 11:15 | Retrieve from Storage |
| MC3417-1.2 | Mahmoud Afzali | Walk In Ref #5 | 09/17/11 08:17 | Return to Storage |
| MC3417-1.2 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-1.4 | VOC Ref #10 | Amy Min Yang | 09/13/11 16:45 | Retrieve from Storage |
| MC3417-1.4 | Amy Min Yang | GCMSV | 09/13/11 16:46 | Load on Instrument |
| MC3417-1.4 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3417-1.4 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3417-1.4 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-1.5 | VOC Ref #10 | Anthony Franciosa | 09/12/11 09:25 | Retrieve from Storage |
| MC3417-1.5 | Anthony Franciosa | GCBH | 09/12/11 09:25 | Load on Instrument |
| MC3417-1.5 | GCBH | Anthony Franciosa | 09/12/11 13:27 | Unload from Instrument |
| MC3417-1.5 | Anthony Franciosa | VOC Ref #10 | 09/12/11 13:27 | Return to Storage |
| MC3417-1.5 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-1.6 | VOC Ref #10 | Gary Krasinski | 09/12/11 13:32 | Retrieve from Storage |
| MC3417-1.6 | Gary Krasinski | VOC Ref #10 | 09/13/11 11:47 | Return to Storage |
| MC3417-1.6 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-2.1 | Walk In Ref #5 | Hamid Siamak | 09/12/11 08:27 | Retrieve from Storage |
| MC3417-2.1 | Hamid Siamak | Walk In Ref #5 | 09/12/11 09:44 | Return to Storage |
| MC3417-2.1 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-2.2 | Walk In Ref #5 | Mahmoud Afzali | 09/15/11 11:15 | Retrieve from Storage |
| MC3417-2.2 | Mahmoud Afzali | Walk In Ref #5 | 09/17/11 08:17 | Return to Storage |
| MC3417-2.2 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-2.3 | VOC Ref #10 | Amy Min Yang | 09/13/11 16:45 | Retrieve from Storage |
| MC3417-2.3 | Amy Min Yang | GCMSV | 09/13/11 16:46 | Load on Instrument |
| MC3417-2.3 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3417-2.3 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3417-2.3 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-2.5 | VOC Ref #10 | Anthony Franciosa | 09/12/11 09:25 | Retrieve from Storage |
| MC3417-2.5 | Anthony Franciosa | GCBH | 09/12/11 09:25 | Load on Instrument |
| MC3417-2.5 | GCBH | Anthony Franciosa | 09/12/11 13:27 | Unload from Instrument |
| MC3417-2.5 | Anthony Franciosa | VOC Ref #10 | 09/12/11 13:27 | Return to Storage |
| MC3417-2.5 | Scott Parsick | | 10/27/11 13:21 | Disposed |

# Accutest Internal Chain of Custody

Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/09/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3417-2.6 | VOC Ref #10 | Gary Krasinski | 09/12/11 13:32 | Retrieve from Storage |
| MC3417-2.6 | Gary Krasinski | VOC Ref #10 | 09/13/11 11:47 | Return to Storage |
| MC3417-2.6 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-3.1 | Walk In Ref #5 | Hamid Siamak | 09/12/11 08:27 | Retrieve from Storage |
| MC3417-3.1 | Hamid Siamak | Walk In Ref #5 | 09/12/11 09:44 | Return to Storage |
| MC3417-3.1 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-3.2 | Walk In Ref #5 | Amy Min Yang | 09/13/11 16:52 | Retrieve from Storage |
| MC3417-3.2 | Amy Min Yang | Walk In Ref #5 | 09/13/11 16:52 | Return to Storage |
| MC3417-3.2 | Walk In Ref #5 | Mahmoud Afzali | 09/15/11 11:15 | Retrieve from Storage |
| MC3417-3.2 | Mahmoud Afzali | Walk In Ref #5 | 09/17/11 08:17 | Return to Storage |
| MC3417-3.2 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-3.4 | VOC Ref #10 | Amy Min Yang | 09/13/11 16:45 | Retrieve from Storage |
| MC3417-3.4 | Amy Min Yang | GCMSV | 09/13/11 16:46 | Load on Instrument |
| MC3417-3.4 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3417-3.4 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3417-3.4 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-3.5 | VOC Ref #10 | Anthony Franciosa | 09/12/11 09:25 | Retrieve from Storage |
| MC3417-3.5 | Anthony Franciosa | GCBH | 09/12/11 09:25 | Load on Instrument |
| MC3417-3.5 | GCBH | Anthony Franciosa | 09/12/11 13:27 | Unload from Instrument |
| MC3417-3.5 | Anthony Franciosa | VOC Ref #10 | 09/12/11 13:27 | Return to Storage |
| MC3417-3.5 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-3.6 | VOC Ref #10 | Gary Krasinski | 09/12/11 13:32 | Retrieve from Storage |
| MC3417-3.6 | Gary Krasinski | VOC Ref #10 | 09/13/11 11:47 | Return to Storage |
| MC3417-3.6 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-4.1 | Walk In Ref #5 | Hamid Siamak | 09/12/11 08:27 | Retrieve from Storage |
| MC3417-4.1 | Hamid Siamak | Walk In Ref #5 | 09/12/11 09:44 | Return to Storage |
| MC3417-4.1 | Walk In Ref #5 | Mahmoud Afzali | 09/15/11 11:15 | Retrieve from Storage |
| MC3417-4.1 | Mahmoud Afzali | Walk In Ref #5 | 09/17/11 08:17 | Return to Storage |
| MC3417-4.1 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-4.3 | VOC Ref #10 | Amy Min Yang | 09/21/11 18:58 | Retrieve from Storage |
| MC3417-4.3 | Amy Min Yang | GCMSV | 09/21/11 18:58 | Load on Instrument |
| MC3417-4.3 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3417-4.3 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3417-4.3 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-4.4 | VOC Ref #10 | Amy Min Yang | 09/21/11 09:37 | Retrieve from Storage |
| MC3417-4.4 | Amy Min Yang | GCMSV | 09/21/11 09:37 | Load on Instrument |

# Accutest Internal Chain of Custody

Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/09/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3417-4.4 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3417-4.4 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3417-4.4 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-4.5 | VOC Ref #10 | Anthony Franciosa | 09/12/11 09:25 | Retrieve from Storage |
| MC3417-4.5 | Anthony Franciosa | GCBH | 09/12/11 09:25 | Load on Instrument |
| MC3417-4.5 | GCBH | Anthony Franciosa | 09/12/11 13:27 | Unload from Instrument |
| MC3417-4.5 | Anthony Franciosa | VOC Ref #10 | 09/12/11 13:27 | Return to Storage |
| MC3417-4.5 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-4.6 | VOC Ref #10 | Gary Krasinski | 09/12/11 13:32 | Retrieve from Storage |
| MC3417-4.6 | Gary Krasinski | VOC Ref #10 | 09/13/11 11:47 | Return to Storage |
| MC3417-4.6 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-5.1 | Walk In Ref #5 | Hamid Siamak | 09/12/11 08:27 | Retrieve from Storage |
| MC3417-5.1 | Hamid Siamak | Walk In Ref #5 | 09/12/11 09:44 | Return to Storage |
| MC3417-5.1 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-5.2 | Walk In Ref #5 | Mahmoud Afzali | 09/15/11 11:15 | Retrieve from Storage |
| MC3417-5.2 | Mahmoud Afzali | Walk In Ref #5 | 09/17/11 08:17 | Return to Storage |
| MC3417-5.2 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-5.4 | VOC Ref #10 | Amy Min Yang | 09/21/11 09:37 | Retrieve from Storage |
| MC3417-5.4 | Amy Min Yang | GCMSV | 09/21/11 09:37 | Load on Instrument |
| MC3417-5.4 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3417-5.4 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3417-5.4 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-5.5 | VOC Ref #10 | Anthony Franciosa | 09/12/11 09:25 | Retrieve from Storage |
| MC3417-5.5 | Anthony Franciosa | GCBH | 09/12/11 09:25 | Load on Instrument |
| MC3417-5.5 | GCBH | Anthony Franciosa | 09/12/11 13:27 | Unload from Instrument |
| MC3417-5.5 | Anthony Franciosa | VOC Ref #10 | 09/12/11 13:27 | Return to Storage |
| MC3417-5.5 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-5.6 | VOC Ref #10 | Gary Krasinski | 09/12/11 13:32 | Retrieve from Storage |
| MC3417-5.6 | Gary Krasinski | VOC Ref #10 | 09/13/11 11:47 | Return to Storage |
| MC3417-5.6 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-6.1 | Walk In Ref #5 | Hamid Siamak | 09/12/11 08:27 | Retrieve from Storage |
| MC3417-6.1 | Hamid Siamak | Walk In Ref #5 | 09/12/11 09:44 | Return to Storage |
| MC3417-6.1 | Walk In Ref #5 | Mahmoud Afzali | 09/15/11 11:15 | Retrieve from Storage |
| MC3417-6.1 | Mahmoud Afzali | Walk In Ref #5 | 09/17/11 08:17 | Return to Storage |
| MC3417-6.1 | Scott Parsick | | 10/27/11 13:21 | Disposed |

# Accutest Internal Chain of Custody



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/09/11

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3417-6.3 | VOC Ref #10 | Amy Min Yang | 09/21/11 18:58 | Retrieve from Storage |
| MC3417-6.3 | Amy Min Yang | GCMSV | 09/21/11 18:58 | Load on Instrument |
| MC3417-6.3 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3417-6.3 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3417-6.3 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-6.4 | VOC Ref #10 | Amy Min Yang | 09/21/11 09:37 | Retrieve from Storage |
| MC3417-6.4 | Amy Min Yang | GCMSV | 09/21/11 09:37 | Load on Instrument |
| MC3417-6.4 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3417-6.4 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3417-6.4 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-6.5 | VOC Ref #10 | Anthony Franciosa | 09/12/11 09:25 | Retrieve from Storage |
| MC3417-6.5 | Anthony Franciosa | GCBH | 09/12/11 09:25 | Load on Instrument |
| MC3417-6.5 | GCBH | Anthony Franciosa | 09/12/11 13:27 | Unload from Instrument |
| MC3417-6.5 | Anthony Franciosa | VOC Ref #10 | 09/12/11 13:27 | Return to Storage |
| MC3417-6.5 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-6.6 | VOC Ref #10 | Gary Krasinski | 09/12/11 13:32 | Retrieve from Storage |
| MC3417-6.6 | Gary Krasinski | VOC Ref #10 | 09/13/11 11:47 | Return to Storage |
| MC3417-6.6 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-7.1 | Walk In Ref #5 | Hamid Siamak | 09/12/11 08:27 | Retrieve from Storage |
| MC3417-7.1 | Hamid Siamak | Walk In Ref #5 | 09/12/11 09:44 | Return to Storage |
| MC3417-7.1 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-7.2 | Walk In Ref #5 | Mahmoud Afzali | 09/15/11 11:15 | Retrieve from Storage |
| MC3417-7.2 | Mahmoud Afzali | Walk In Ref #5 | 09/17/11 08:17 | Return to Storage |
| MC3417-7.2 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-7.4 | VOC Ref #10 | Amy Min Yang | 09/21/11 09:37 | Retrieve from Storage |
| MC3417-7.4 | Amy Min Yang | GCMSV | 09/21/11 09:37 | Load on Instrument |
| MC3417-7.4 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3417-7.4 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3417-7.4 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-7.5 | VOC Ref #10 | Anthony Franciosa | 09/12/11 09:25 | Retrieve from Storage |
| MC3417-7.5 | Anthony Franciosa | GCBH | 09/12/11 09:25 | Load on Instrument |
| MC3417-7.5 | GCBH | Anthony Franciosa | 09/12/11 13:27 | Unload from Instrument |
| MC3417-7.5 | Anthony Franciosa | VOC Ref #10 | 09/12/11 13:27 | Return to Storage |
| MC3417-7.5 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-7.6 | VOC Ref #10 | Gary Krasinski | 09/12/11 13:32 | Retrieve from Storage |
| MC3417-7.6 | Gary Krasinski | VOC Ref #10 | 09/13/11 11:47 | Return to Storage |

# Accutest Internal Chain of Custody

Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/09/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3417-7.6 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-8.1 | Walk In Ref #5 | Hamid Siamak | 09/12/11 08:27 | Retrieve from Storage |
| MC3417-8.1 | Hamid Siamak | Walk In Ref #5 | 09/12/11 09:44 | Return to Storage |
| MC3417-8.1 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-8.2 | Walk In Ref #5 | Mahmoud Afzali | 09/15/11 11:15 | Retrieve from Storage |
| MC3417-8.2 | Mahmoud Afzali | Walk In Ref #5 | 09/17/11 08:17 | Return to Storage |
| MC3417-8.2 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-8.5 | VOC Ref #10 | Anthony Franciosa | 09/12/11 09:25 | Retrieve from Storage |
| MC3417-8.5 | Anthony Franciosa | GCBH | 09/12/11 09:25 | Load on Instrument |
| MC3417-8.5 | GCBH | Anthony Franciosa | 09/12/11 13:27 | Unload from Instrument |
| MC3417-8.5 | Anthony Franciosa | VOC Ref #10 | 09/12/11 13:27 | Return to Storage |
| MC3417-8.5 | VOC Ref #10 | Gary Krasinski | 09/12/11 13:32 | Retrieve from Storage |
| MC3417-8.5 | Gary Krasinski | VOC Ref #10 | 09/14/11 12:00 | Return to Storage |
| MC3417-8.5 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-9.1 | Walk In Ref #5 | Hamid Siamak | 09/12/11 08:27 | Retrieve from Storage |
| MC3417-9.1 | Hamid Siamak | Walk In Ref #5 | 09/12/11 09:44 | Return to Storage |
| MC3417-9.1 | Walk In Ref #5 | Mahmoud Afzali | 09/15/11 11:15 | Retrieve from Storage |
| MC3417-9.1 | Mahmoud Afzali | Walk In Ref #5 | 09/17/11 08:17 | Return to Storage |
| MC3417-9.1 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-9.4 | VOC Ref #10 | Amy Min Yang | 09/21/11 09:37 | Retrieve from Storage |
| MC3417-9.4 | Amy Min Yang | GCMSV | 09/21/11 09:37 | Load on Instrument |
| MC3417-9.4 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3417-9.4 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3417-9.4 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-9.5 | VOC Ref #10 | Anthony Franciosa | 09/12/11 09:25 | Retrieve from Storage |
| MC3417-9.5 | Anthony Franciosa | GCBH | 09/12/11 09:25 | Load on Instrument |
| MC3417-9.5 | GCBH | Anthony Franciosa | 09/12/11 13:27 | Unload from Instrument |
| MC3417-9.5 | Anthony Franciosa | VOC Ref #10 | 09/12/11 13:27 | Return to Storage |
| MC3417-9.5 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-9.6 | VOC Ref #10 | Gary Krasinski | 09/12/11 13:32 | Retrieve from Storage |
| MC3417-9.6 | Gary Krasinski | VOC Ref #10 | 09/13/11 11:47 | Return to Storage |
| MC3417-9.6 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-10.1 | Walk In Ref #5 | Hamid Siamak | 09/12/11 08:27 | Retrieve from Storage |
| MC3417-10.1 | Hamid Siamak | Walk In Ref #5 | 09/12/11 09:44 | Return to Storage |
| MC3417-10.1 | Scott Parsick | | 10/27/11 13:21 | Disposed |

# Accutest Internal Chain of Custody



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/09/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3417-10.2 | Walk In Ref #5 | Mahmoud Afzali | 09/15/11 11:15 | Retrieve from Storage |
| MC3417-10.2 | Mahmoud Afzali | Walk In Ref #5 | 09/17/11 08:17 | Return to Storage |
| MC3417-10.2 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-10.5 | VOC Ref #10 | Anthony Franciosa | 09/12/11 09:25 | Retrieve from Storage |
| MC3417-10.5 | Anthony Franciosa | GCBH | 09/12/11 09:25 | Load on Instrument |
| MC3417-10.5 | GCBH | Anthony Franciosa | 09/12/11 13:27 | Unload from Instrument |
| MC3417-10.5 | Anthony Franciosa | VOC Ref #10 | 09/12/11 13:27 | Return to Storage |
| MC3417-10.5 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-10.6 | VOC Ref #10 | Gary Krasinski | 09/12/11 13:32 | Retrieve from Storage |
| MC3417-10.6 | Gary Krasinski | VOC Ref #10 | 09/14/11 12:00 | Return to Storage |
| MC3417-10.6 | Scott Parsick | | 10/27/11 13:21 | Disposed |
| MC3417-11.1 | VOC Ref #4 | Jugal Patel | 09/19/11 16:48 | Retrieve from Storage |
| MC3417-11.1 | Jugal Patel | VOC Ref #4 | 09/21/11 10:24 | Return to Storage |
| MC3417-11.1 | Scott Parsick | | 10/27/11 13:21 | Disposed |

New England ACCUTEST LABORATORIES



## GC/MS Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV78-MB | V1778.D | 1 | 09/13/11 | AMY | n/a | n/a | MSV78 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-1, MC3417-2, MC3417-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary

Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV78-MB | V1778.D | 1 | 09/13/11 | AMY | n/a | n/a | MSV78 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-1, MC3417-2, MC3417-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV78-MB | V1778.D | 1 | 09/13/11 | AMY | n/a | n/a | MSV78 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-1, MC3417-2, MC3417-3

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 102% | 70-130% |

# Method Blank Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSE2258-MB | E55534.D | 1 | 09/13/11 | GK | n/a | n/a | MSE2258 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-8, MC3417-10

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 58 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 850 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 250 | 100 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 6.3 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 9.5 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 52 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 10 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 24 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 34 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 59 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 63 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 8.3 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 33 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 48 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 11 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 4.7 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 13 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 250 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 7.4 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 11 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 7.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 56 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 250 | 250 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 33 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 100 | 9.6 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 7.5 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 7.2 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 7.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 17 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 7.6 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 7.3 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 16 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 156-60-5 | traus-1,2-Dichloroethene | ND | 100 | 13 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 11 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 58 | ug/kg | |

# Method Blank Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSE2258-MB | E55534.D | 1 | 09/13/11 | GK | n/a | n/a | MSE2258 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-8, MC3417-10

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 9.2 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 9.6 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 50 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 34 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 160 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 6.5 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 250 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 52 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 7.9 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.1 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 31 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 42 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 15 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 18 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 250 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 8.1 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 25 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 8.8 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 8.4 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 9.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 55 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 250 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 9.2 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 13 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 9.8 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 46 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 10 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 7.9 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 9.1 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 59 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 32 | ug/kg | |
| | m,p-Xylene | ND | 100 | 13 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 9.2 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 6.3 | ug/kg | |

# Method Blank Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSE2258-MB | E55534.D | 1 | 09/13/11 | GK | n/a | n/a | MSE2258 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-8, MC3417-10

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 92% | 70-130% |
| 2037-26-5 | Toluene-D8 | 103% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | 70-130% |

# Method Blank Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1397-MB2 | M43454.D | 1 | 09/20/11 | TD | n/a | n/a | MSM1397 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-11

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |

# Method Blank Summary

Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1397-MB2 | M43454.D | 1 | 09/20/11 | TD | n/a | n/a | MSM1397 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-11

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

# Method Blank Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1397-MB2 | M43454.D | 1 | 09/20/11 | TD | n/a | n/a | MSM1397 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-11

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 92% | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | 70-130% |

# Method Blank Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV85-MB | V1952.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-5, MC3417-6, MC3417-7, MC3417-9

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary

Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV85-MB | V1952.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-5, MC3417-6, MC3417-7, MC3417-9

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary

Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV85-MB | V1952.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-5, MC3417-6, MC3417-7, MC3417-9

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

# Method Blank Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV87-MB | V1991.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV87 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dihromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary

Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV87-MB | V1991.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV87 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary

Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV87-MB | V1991.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV87 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-4

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

# Blank Spike Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV78-BS | V1776.D | 1 | 09/13/11 | AMY | n/a | n/a | MSV78 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-1, MC3417-2, MC3417-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 55.6 | 111 | 70-130 |
| 107-02-8 | Acrolein | 250 | 790 | 316* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 294 | 588* a | 70-130 |
| 71-43-2 | Benzene | 50 | 53.6 | 107 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 46.3 | 93 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 50.1 | 100 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 50.7 | 101 | 70-130 |
| 75-25-2 | Bromoform | 50 | 40.4 | 81 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 56.7 | 113 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 48.1 | 96 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 56.7 | 113 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 55.0 | 110 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 53.8 | 108 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 44.3 | 89 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 51.3 | 103 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 55.6 | 111 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 63.4 | 127 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 17.2 | 34 | 10-160 |
| 67-66-3 | Chloroform | 50 | 53.0 | 106 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 54.6 | 109 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 49.0 | 98 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 48.9 | 98 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 39.6 | 79 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 40.0 | 80 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 38.5 | 77 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 53.1 | 106 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 50.3 | 101 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 48.6 | 97 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 49.9 | 100 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 50.0 | 100 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 54.5 | 109 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 48.9 | 98 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 50.3 | 101 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 46.2 | 92 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 54.5 | 109 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 41.4 | 83 | 70-130 |

# Blank Spike Summary

Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV78-BS | V1776.D | 1 | 09/13/11 | AMY | n/a | n/a | MSV78 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-1, MC3417-2, MC3417-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 54.8 | 110 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 52.3 | 105 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 52.7 | 105 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 54.2 | 108 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 248 | 99 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 50.4 | 101 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 55.1 | 110 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 49.7 | 99 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 51.3 | 103 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 58.9 | 118 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 54.8 | 110 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 46.0 | 92 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 52.6 | 105 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 53.0 | 106 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 49.9 | 100 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 44.8 | 90 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 48.1 | 96 | 70-130 |
| 100-42-5 | Styrene | 50 | 53.6 | 107 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 51.1 | 102 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 45.4 | 91 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 42.6 | 85 | 70-130 |
| 108-88-3 | Toluene | 50 | 50.6 | 101 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 46.2 | 92 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 54.6 | 109 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 51.6 | 103 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 46.9 | 94 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 50.0 | 100 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 51.4 | 103 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 43.6 | 87 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 54.4 | 109 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 49.5 | 99 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 38.8 | 78 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 50.1 | 100 | 70-130 |
| | m,p-Xylene | 100 | 111 | 111 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 53.4 | 107 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 164 | 109 | 70-130 |

# Blank Spike Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV78-BS | V1776.D | 1 | 09/13/11 | AMY | n/a | n/a | MSV78 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-1, MC3417-2, MC3417-3

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 102% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSE2258-BS | E55532.D | 1 | 09/13/11 | GK | n/a | n/a | MSE2258 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-8, MC3417-10

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 1960 | 78 | 70-130 |
| 107-02-8 | Acrolein | 12500 | 31400 | 251* a | 70-130 |
| 107-13-1 | Acrylonitrile | 2500 | 11200 | 448* a | 70-130 |
| 71-43-2 | Benzene | 2500 | 2500 | 100 | 70-130 |
| 108-86-1 | Bromobenzene | 2500 | 2390 | 96 | 70-130 |
| 74-97-5 | Bromochloromethane | 2500 | 2320 | 93 | 70-130 |
| 75-27-4 | Bromodichloromethane | 2500 | 2600 | 104 | 70-130 |
| 75-25-2 | Bromoform | 2500 | 2260 | 90 | 70-130 |
| 74-83-9 | Bromomethane | 2500 | 2360 | 94 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 1980 | 79 | 70-130 |
| 104-51-8 | n-Butylbenzene | 2500 | 3000 | 120 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2910 | 116 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2890 | 116 | 70-130 |
| 75-15-0 | Carbon disulfide | 2500 | 2580 | 103 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2650 | 106 | 70-130 |
| 108-90-7 | Chlorobenzene | 2500 | 2430 | 97 | 70-130 |
| 75-00-3 | Chloroethane | 2500 | 2550 | 102 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 701 | 28 | 10-160 |
| 67-66-3 | Chloroform | 2500 | 2560 | 102 | 70-130 |
| 74-87-3 | Chloromethane | 2500 | 2170 | 87 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2570 | 103 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2620 | 105 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 2500 | 2120 | 85 | 70-130 |
| 124-48-1 | Dibromochloromethane | 2500 | 2360 | 94 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 2500 | 2200 | 88 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2390 | 96 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2500 | 100 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2520 | 101 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 1960 | 78 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2590 | 104 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2470 | 99 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2670 | 107 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2300 | 92 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2460 | 98 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2400 | 96 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2130 | 85 | 70-130 |

# Blank Spike Summary

Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSE2258-BS | E55532.D | 1 | 09/13/11 | GK | n/a | n/a | MSE2258 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-8, MC3417-10

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2630 | 105 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2590 | 104 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2520 | 101 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2670 | 107 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 12500 | 10200 | 82 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2190 | 88 | 76-141 |
| 100-41-4 | Ethylbenzene | 2500 | 2550 | 102 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 3410 | 136* [a] | 70-130 |
| 591-78-6 | 2-Hexanone | 2500 | 2040 | 82 | 70-130 |
| 98-82-8 | Isopropylbenzene | 2500 | 3090 | 124 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 3000 | 120 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2360 | 94 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 2170 | 87 | 70-130 |
| 74-95-3 | Methylene bromide | 2500 | 2360 | 94 | 70-130 |
| 75-09-2 | Methylene chloride | 2500 | 2460 | 98 | 70-130 |
| 91-20-3 | Naphthalene | 2500 | 2670 | 107 | 70-130 |
| 103-65-1 | n-Propylbenzene | 2500 | 2730 | 109 | 70-130 |
| 100-42-5 | Styrene | 2500 | 2440 | 98 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2380 | 95 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2140 | 86 | 70-130 |
| 127-18-4 | Tetrachloroethene | 2500 | 2460 | 98 | 70-130 |
| 108-88-3 | Toluene | 2500 | 2610 | 104 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 3120 | 125 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2990 | 120 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2700 | 108 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2380 | 95 | 70-130 |
| 79-01-6 | Trichloroethene | 2500 | 2550 | 102 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2490 | 100 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2180 | 87 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2720 | 109 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2730 | 109 | 70-130 |
| 108-05-4 | Vinyl Acetate | 2500 | 1790 | 72 | 70-130 |
| 75-01-4 | Vinyl chloride | 2500 | 2200 | 88 | 70-130 |
| | m,p-Xylene | 5000 | 5100 | 102 | 70-130 |
| 95-47-6 | o-Xylene | 2500 | 2520 | 101 | 70-130 |
| 1330-20-7 | Xylene (total) | 7500 | 7610 | 101 | 70-130 |

# Blank Spike Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSE2258-BS | E55532.D | 1 | 09/13/11 | GK | n/a | n/a | MSE2258 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-8, MC3417-10

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 93% | 70-130% |
| 2037-26-5 | Toluene-D8 | 107% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 104% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1397-BS2 | M43452.D | 1 | 09/20/11 | TD | n/a | n/a | MSM1397 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-11

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 91.6 | 183* a | 70-130 |
| 107-02-8 | Acrolein | 250 | 88.8 | 36* b | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 223 | 446* a | 70-130 |
| 71-43-2 | Benzene | 50 | 51.6 | 103 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 56.4 | 113 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 53.5 | 107 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 58.0 | 116 | 70-130 |
| 75-25-2 | Bromoform | 50 | 50.3 | 101 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 50.5 | 101 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 63.8 | 128 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 59.0 | 118 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 57.9 | 116 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 56.2 | 112 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 48.9 | 98 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 60.8 | 122 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 54.9 | 110 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 49.4 | 99 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 43.5 | 87 | 70-130 |
| 67-66-3 | Chloroform | 50 | 53.2 | 106 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 43.3 | 87 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 53.6 | 107 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 55.5 | 111 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 48.0 | 96 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 59.7 | 119 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 55.6 | 111 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 55.0 | 110 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 55.5 | 111 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 54.9 | 110 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 47.3 | 95 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 52.5 | 105 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 55.1 | 110 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 54.7 | 109 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 53.6 | 107 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 54.6 | 109 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 54.9 | 110 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 52.8 | 106 | 70-130 |

# Blank Spike Summary

Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1397-BS2 | M43452.D | 1 | 09/20/11 | TD | n/a | n/a | MSM1397 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-11

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 60.7 | 121 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 56.9 | 114 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 52.6 | 105 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 56.6 | 113 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 213 | 85 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 49.3 | 99 | 77-137 |
| 100-41-4 | Ethylbenzene | 50 | 56.2 | 112 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 71.1 | 142* a | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 78.6 | 157* a | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 63.6 | 127 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 59.3 | 119 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 49.0 | 98 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 51.0 | 102 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 54.1 | 108 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 52.4 | 105 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 49.9 | 100 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 55.9 | 112 | 70-130 |
| 100-42-5 | Styrene | 50 | 54.4 | 109 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 57.3 | 115 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 46.9 | 94 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 61.7 | 123 | 70-130 |
| 108-88-3 | Toluene | 50 | 56.8 | 114 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 54.4 | 109 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 58.4 | 117 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 57.3 | 115 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 54.8 | 110 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 57.2 | 114 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 54.6 | 109 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 48.4 | 97 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 53.6 | 107 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 53.4 | 107 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 30.7 | 61* b | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 41.6 | 83 | 70-130 |
|  | m,p-Xylene | 100 | 116 | 116 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 57.3 | 115 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 174 | 116 | 70-130 |

# Blank Spike Summary

Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1397-BS2 | M43452.D | 1 | 09/20/11 | TD | n/a | n/a | MSM1397 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-11

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 88% | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits. Blank Spike meets program technical requirements.

# Blank Spike Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV85-BS | V1951.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-5, MC3417-6, MC3417-7, MC3417-9

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 79.2 | 158* a | 70-130 |
| 107-02-8 | Acrolein | 250 | 793 | 317* b | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 323 | 646* b | 70-130 |
| 71-43-2 | Benzene | 50 | 56.0 | 112 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 47.9 | 96 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 51.0 | 102 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 52.0 | 104 | 70-130 |
| 75-25-2 | Bromoform | 50 | 43.9 | 88 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 51.8 | 104 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 53.1 | 106 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 58.3 | 117 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 52.5 | 105 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 50.6 | 101 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 48.8 | 98 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 49.7 | 99 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 54.6 | 109 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 60.3 | 121 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 49.0 | 98 | 10-160 |
| 67-66-3 | Chloroform | 50 | 54.1 | 108 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 50.4 | 101 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 49.4 | 99 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 50.4 | 101 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 43.2 | 86 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 48.5 | 97 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 48.1 | 96 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 53.4 | 107 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 50.1 | 100 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 49.0 | 98 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 45.3 | 91 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 57.9 | 116 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 52.8 | 106 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 55.2 | 110 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 53.2 | 106 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 53.6 | 107 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 53.7 | 107 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 48.2 | 96 | 70-130 |

# Blank Spike Summary

Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV85-BS | V1951.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-5, MC3417-6, MC3417-7, MC3417-9

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 57.0 | 114 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 52.8 | 106 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 54.2 | 108 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 56.2 | 112 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 273 | 109 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 51.9 | 104 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 55.1 | 110 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 52.0 | 104 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 65.2 | 130 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 58.5 | 117 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 54.9 | 110 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 52.4 | 105 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 56.7 | 113 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 52.4 | 105 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 59.0 | 118 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 52.4 | 105 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 52.1 | 104 | 70-130 |
| 100-42-5 | Styrene | 50 | 54.5 | 109 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 51.4 | 103 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 49.0 | 98 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 50.3 | 101 | 70-130 |
| 108-88-3 | Toluene | 50 | 52.3 | 105 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 53.1 | 106 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 55.5 | 111 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 52.1 | 104 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 50.4 | 101 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 51.2 | 102 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 48.5 | 97 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 46.3 | 93 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 50.6 | 101 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 50.7 | 101 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 38.6 | 77 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 45.5 | 91 | 70-130 |
|  | m,p-Xylene | 100 | 111 | 111 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 54.4 | 109 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 165 | 110 | 70-130 |

# Blank Spike Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV85-BS | V1951.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-5, MC3417-6, MC3417-7, MC3417-9

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 95% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV87-BS | V1990.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV87 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 68.9 | 138* a | 70-130 |
| 107-02-8 | Acrolein | 250 | 793 | 317* b | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 314 | 628* b | 70-130 |
| 71-43-2 | Benzene | 50 | 53.1 | 106 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 49.1 | 98 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 48.0 | 96 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 51.2 | 102 | 70-130 |
| 75-25-2 | Bromoform | 50 | 44.4 | 89 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 46.7 | 93 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 50.1 | 100 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 61.4 | 123 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 54.4 | 109 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 53.4 | 107 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 42.7 | 85 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 48.7 | 97 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 54.6 | 109 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 53.8 | 108 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 12.4 | 25 | 10-160 |
| 67-66-3 | Chloroform | 50 | 52.4 | 105 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 43.1 | 86 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 51.0 | 102 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 52.7 | 105 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 45.7 | 91 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 49.0 | 98 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 49.0 | 98 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 55.4 | 111 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 52.0 | 104 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 51.2 | 102 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 34.9 | 70 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 53.8 | 108 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 53.3 | 107 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 49.9 | 100 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 49.6 | 99 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 49.4 | 99 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 51.6 | 103 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 49.3 | 99 | 70-130 |

# Blank Spike Summary

Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV87-BS | V1990.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV87 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 54.3 | 109 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 50.9 | 102 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 52.7 | 105 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 55.3 | 111 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 244 | 98 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 52.7 | 105 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 55.4 | 111 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 53.3 | 107 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 59.7 | 119 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 60.8 | 122 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 57.0 | 114 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 49.4 | 99 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 56.4 | 113 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 50.4 | 101 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 55.1 | 110 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 53.9 | 108 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 54.1 | 108 | 70-130 |
| 100-42-5 | Styrene | 50 | 54.8 | 110 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 51.5 | 103 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 52.6 | 105 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 49.4 | 99 | 70-130 |
| 108-88-3 | Toluene | 50 | 50.4 | 101 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 54.0 | 108 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 56.9 | 114 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 50.2 | 100 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 49.3 | 99 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 49.1 | 98 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 44.6 | 89 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 51.3 | 103 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 52.7 | 105 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 52.2 | 104 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 44.4 | 89 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 39.3 | 79 | 70-130 |
| | m,p-Xylene | 100 | 111 | 111 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 54.4 | 109 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 166 | 111 | 70-130 |

# Blank Spike Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV87-BS | V1990.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV87 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-4

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3464-4MS | E55543.D | 1 | 09/13/11 | GK | n/a | n/a | MSE2258 |
| MC3464-4MSD | E55544.D | 1 | 09/13/11 | GK | n/a | n/a | MSE2258 |
| MC3464-4 | E55537.D | 1 | 09/13/11 | GK | n/a | n/a | MSE2258 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-8, MC3417-10

| CAS No. | Compound | MC3464-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 1630 | 1350 | 83 | 1370 | 84 | 1 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 8170 | 20400 | 250* [a] | 23400 | 287* [a] | 14 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 1630 | 7370 | 451* [a] | 7330 | 449* [a] | 1 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 1630 | 1690 | 103 | 1760 | 108 | 4 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 1630 | 1620 | 99 | 1660 | 102 | 2 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 1630 | 1620 | 99 | 1650 | 101 | 2 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 1630 | 1730 | 106 | 1820 | 111 | 5 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 1630 | 1490 | 91 | 1510 | 92 | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 1630 | 1550 | 95 | 1630 | 100 | 5 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 1630 | 1190 | 73 | 1480 | 91 | 22 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 1630 | 1830 | 112 | 1970 | 121 | 7 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 1630 | 1850 | 113 | 1980 | 121 | 7 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 1630 | 1820 | 111 | 1920 | 118 | 5 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 1630 | 1770 | 108 | 1810 | 111 | 2 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 1630 | 1850 | 113 | 1890 | 116 | 2 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 1630 | 1600 | 98 | 1640 | 100 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 1630 | 1640 | 100 | 1770 | 108 | 8 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 1630 | 491 | 30 | 319 | 20 | 42* [b] | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 1630 | 1710 | 105 | 1760 | 108 | 3 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 1630 | 1410 | 86 | 1600 | 98 | 13 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 1630 | 1680 | 103 | 1710 | 105 | 2 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 1630 | 1730 | 106 | 1760 | 108 | 2 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 1630 | 1360 | 83 | 1340 | 82 | 1 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 1630 | 1590 | 97 | 1600 | 98 | 1 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 1630 | 1490 | 91 | 1500 | 92 | 1 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 1630 | 1620 | 99 | 1660 | 102 | 2 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 1630 | 1660 | 102 | 1750 | 107 | 5 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 1630 | 1680 | 103 | 1760 | 108 | 5 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 1630 | 1550 | 95 | 1570 | 96 | 1 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 1630 | 1770 | 108 | 1800 | 110 | 2 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 1630 | 1710 | 105 | 1740 | 107 | 2 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 1630 | 1800 | 110 | 1840 | 113 | 2 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 1630 | 1610 | 99 | 1650 | 101 | 2 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 1630 | 1670 | 102 | 1730 | 106 | 4 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 1630 | 1650 | 101 | 1700 | 104 | 3 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 1630 | 1440 | 88 | 1530 | 94 | 6 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3464-4MS | E55543.D | 1 | 09/13/11 | GK | n/a | n/a | MSE2258 |
| MC3464-4MSD | E55544.D | 1 | 09/13/11 | GK | n/a | n/a | MSE2258 |
| MC3464-4 | E55537.D | 1 | 09/13/11 | GK | n/a | n/a | MSE2258 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-8, MC3417-10

| CAS No. | Compound | MC3464-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 1630 | 1780 | 109 | 1760 | 108 | 1 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 1630 | 1690 | 103 | 1750 | 107 | 3 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 1630 | 1670 | 102 | 1720 | 105 | 3 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 1630 | 1770 | 108 | 1830 | 112 | 3 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 8170 | 4900 | 60* [c] | 6240 | 76 | 24 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 1630 | 1390 | 85 | 1440 | 88 | 4 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 1630 | 1680 | 103 | 1720 | 105 | 2 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 1630 | 2050 | 126 | 2210 | 135* [c] | 8 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 1630 | 1370 | 84 | 1350 | 83 | 1 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 1630 | 2040 | 125 | 2070 | 127 | 1 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 1630 | 1900 | 116 | 2010 | 123 | 6 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 1630 | 1530 | 94 | 1590 | 97 | 4 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 1630 | 1470 | 90 | 1460 | 89 | 1 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 1630 | 1630 | 100 | 1680 | 103 | 3 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 1630 | 1690 | 103 | 1710 | 105 | 1 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 1630 | 1440 | 88 | 1710 | 105 | 17 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 1630 | 1810 | 111 | 1870 | 115 | 3 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 1630 | 1570 | 96 | 1640 | 100 | 4 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 1630 | 1590 | 97 | 1640 | 100 | 3 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 1630 | 1470 | 90 | 1520 | 93 | 3 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 1630 | 1740 | 107 | 1750 | 107 | 1 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 1630 | 1730 | 106 | 1800 | 110 | 4 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 1630 | 1520 | 93 | 1840 | 113 | 19 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 1630 | 1660 | 102 | 1870 | 115 | 12 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 1630 | 1800 | 110 | 1830 | 112 | 2 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 1630 | 1560 | 96 | 1670 | 102 | 7 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 1630 | 1710 | 105 | 1760 | 108 | 3 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 1630 | 1730 | 106 | 1770 | 108 | 2 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 1630 | 1480 | 91 | 1440 | 88 | 3 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 1630 | 1780 | 109 | 1840 | 113 | 3 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 1630 | 1790 | 110 | 1860 | 114 | 4 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 1630 | 1150 | 70 | 1210 | 74 | 5 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 1630 | 1460 | 89 | 1570 | 96 | 7 | 70-130/30 |
| | m,p-Xylene | ND | | 3270 | 3380 | 103 | 3440 | 105 | 2 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 1630 | 1600 | 98 | 1710 | 105 | 7 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 4900 | 4990 | 102 | 5150 | 105 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3464-4MS | E55543.D | 1 | 09/13/11 | GK | n/a | n/a | MSE2258 |
| MC3464-4MSD | E55544.D | 1 | 09/13/11 | GK | n/a | n/a | MSE2258 |
| MC3464-4 | E55537.D | 1 | 09/13/11 | GK | n/a | n/a | MSE2258 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-8, MC3417-10

| CAS No. | Surrogate Recoveries | MS | MSD | MC3464-4 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 91% | 92% | 94% | 70-130% |
| 2037-26-5 | Toluene-D8 | 103% | 106% | 108% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | 102% | 107% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) High RPD due to possible matrix interference and/or sample non-homogeneity.
(c) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3417-3MS | V1796.D | 1 | 09/13/11 | AMY | n/a | n/a | MSV78 |
| MC3417-3MSD | V1797.D | 1 | 09/13/11 | AMY | n/a | n/a | MSV78 |
| MC3417-3 | V1795.D | 1 | 09/13/11 | AMY | n/a | n/a | MSV78 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-1, MC3417-2, MC3417-3

| CAS No. | Compound | MC3417-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 63 | 60.8 | 96 | 54.6 | 99 | 11 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 315 | 899 | 285* a | 663 | 240* a | 30 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 63 | 393 | 623* a | 312 | 565* a | 23 | 70-130/30 |
| 71-43-2 | Benzene | 0.38 | J | 63 | 74.2 | 117 | 60.3 | 108 | 21 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 63 | 57.2 | 91 | 43.4 | 79 | 27 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 63 | 64.6 | 102 | 66.0 | 119 | 2 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 63 | 63.4 | 101 | 58.7 | 106 | 8 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 63 | 74.8 | 119 | 61.3 | 111 | 20 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 63 | 64.4 | 102 | 58.9 | 107 | 9 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 63 | 98.3 | 156* b | 107 | 194* b | 8 | 70-130/30 |
| 104-51-8 | u-Butylbenzene | ND | | 63 | 72.1 | 114 | 49.1 | 89 | 38* c | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 63 | 61.4 | 97 | 46.4 | 84 | 28 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 63 | 61.9 | 98 | 47.2 | 85 | 27 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 63 | 47.8 | 76 | 44.7 | 81 | 7 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 63 | 66.0 | 105 | 55.9 | 101 | 17 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 63 | 62.6 | 99 | 54.4 | 98 | 14 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 63 | 76.6 | 122 | 67.6 | 122 | 12 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 63 | ND | 0* b | ND | 0* b | nc | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 63 | 65.7 | 104 | 59.4 | 108 | 10 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 63 | 69.1 | 110 | 57.9 | 105 | 18 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 63 | 63.3 | 100 | 48.8 | 88 | 26 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 63 | 59.6 | 95 | 45.7 | 83 | 26 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 63 | 91.5 | 145* b | 72.5 | 131* b | 23 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 63 | 65.4 | 104 | 57.7 | 104 | 13 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 63 | 69.4 | 110 | 63.8 | 115 | 8 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 63 | 67.9 | 108 | 47.3 | 86 | 36* c | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 63 | 57.5 | 91 | 43.7 | 79 | 27 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 63 | 57.3 | 91 | 49.3 | 89 | 15 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 63 | 61.1 | 97 | 50.7 | 92 | 19 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 63 | 66.4 | 105 | 52.3 | 95 | 24 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 63 | 84.6 | 134* b | 72.0 | 130 | 16 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 63 | 59.3 | 94 | 50.0 | 91 | 17 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 63 | 67.1 | 106 | 46.7 | 85 | 36* c | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 63 | 59.5 | 94 | 47.4 | 86 | 23 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 63 | 65.6 | 104 | 57.4 | 104 | 13 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 63 | 66.2 | 105 | 60.8 | 110 | 9 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3417-3MS | V1796.D | 1 | 09/13/11 | AMY | n/a | n/a | MSV78 |
| MC3417-3MSD | V1797.D | 1 | 09/13/11 | AMY | n/a | n/a | MSV78 |
| MC3417-3 | V1795.D | 1 | 09/13/11 | AMY | n/a | n/a | MSV78 |

5.3.2

5

The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-1, MC3417-2, MC3417-3

| CAS No. | Compound | MC3417-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 63 | 67.2 | 107 | 53.3 | 96 | 23 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 63 | 70.2 | 111 | 56.9 | 103 | 21 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 63 | 63.8 | 101 | 59.7 | 108 | 7 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 63 | 70.4 | 112 | 70.1 | 127 | 0 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 315 | 489 | 155* b | 495 | 179* b | 1 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 63 | 77.4 | 123 | 79.3 | 144 | 2 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 63 | 64.9 | 103 | 56.3 | 102 | 14 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 63 | 63.3 | 100 | 51.8 | 94 | 20 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 63 | 109 | 173* b | 101 | 183* b | 8 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 63 | 68.9 | 109 | 51.6 | 93 | 29 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 63 | 63.6 | 101 | 52.3 | 95 | 19 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 63 | 68.3 | 108 | 58.7 | 106 | 15 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 63 | 111 | 176* b | 113 | 205* b | 2 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 63 | 70.9 | 112 | 73.0 | 132* b | 3 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 63 | 64.2 | 102 | 52.6 | 95 | 20 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 63 | 81.8 | 130 | 71.7 | 130 | 13 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 63 | 59.4 | 94 | 43.1 | 78 | 32* c | 70-130/30 |
| 100-42-5 | Styrene | ND | | 63 | 59.2 | 94 | 58.4 | 106 | 1 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 63 | 62.7 | 99 | 55.3 | 100 | 13 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 63 | 80.1 | 127 | 60.7 | 110 | 28 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 63 | 59.1 | 94 | 54.0 | 98 | 9 | 70-130/30 |
| 108-88-3 | Toluene | 2.4 | J | 63 | 56.7 | 86 | 62.5 | 109 | 10 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 63 | 63.3 | 100 | 53.8 | 97 | 16 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 63 | 63.2 | 100 | 48.1 | 87 | 27 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 63 | 60.3 | 96 | 58.4 | 106 | 3 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 63 | 66.9 | 106 | 62.7 | 114 | 6 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 63 | 59.7 | 95 | 54.6 | 99 | 9 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 63 | 64.1 | 102 | 56.3 | 102 | 13 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 63 | 81.1 | 129 | 63.3 | 115 | 25 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 63 | 57.3 | 91 | 44.9 | 81 | 24 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 63 | 58.4 | 93 | 45.7 | 83 | 24 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 63 | 46.0 | 73 | 37.9 | 69* b | 19 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 63 | 58.0 | 92 | 50.4 | 91 | 14 | 70-130/30 |
| | m,p-Xylene | ND | | 126 | 123 | 98 | 111 | 100 | 10 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 63 | 62.0 | 98 | 62.8 | 114 | 1 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 189 | 185 | 98 | 173 | 104 | 7 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3417-3MS | V1796.D | 1 | 09/13/11 | AMY | n/a | n/a | MSV78 |
| MC3417-3MSD | V1797.D | 1 | 09/13/11 | AMY | n/a | n/a | MSV78 |
| MC3417-3 | V1795.D | 1 | 09/13/11 | AMY | n/a | n/a | MSV78 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-1, MC3417-2, MC3417-3

| CAS No. | Surrogate Recoveries | MS | MSD | MC3417-3 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 97% | 105% | 110% | 70-130% |
| 2037-26-5 | Toluene-D8 | 92% | 101% | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 110% | 85% | 92% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(c) High RPD due to possible matrix interference and/or sample non-homogeneity.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3349-3MS | M43461.D | 5 | 09/20/11 | TD | n/a | n/a | MSM1397 |
| MC3349-3MSD | M43462.D | 5 | 09/20/11 | TD | n/a | n/a | MSM1397 |
| MC3349-3 | M43458.D | 1 | 09/20/11 | TD | n/a | n/a | MSM1397 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-11

| CAS No. | Compound | MC3349-3 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 250 | 230 | 92 | 200 | 80 | 14 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 1250 | 2210 | 177* [a] | 1970 | 158* [a] | 11 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 250 | 1160 | 464* [b] | 1060 | 424* [b] | 9 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 250 | 266 | 106 | 255 | 102 | 4 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 250 | 276 | 110 | 270 | 108 | 2 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 250 | 277 | 111 | 267 | 107 | 4 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 250 | 299 | 120 | 288 | 115 | 4 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 250 | 254 | 102 | 237 | 95 | 7 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 250 | 266 | 106 | 256 | 102 | 4 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 250 | 275 | 110 | 267 | 107 | 3 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 250 | 288 | 115 | 281 | 112 | 2 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 250 | 293 | 117 | 289 | 116 | 1 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 250 | 291 | 116 | 281 | 112 | 3 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 250 | 259 | 104 | 247 | 99 | 5 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 250 | 323 | 129 | 302 | 121 | 7 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 250 | 271 | 108 | 266 | 106 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 250 | 263 | 105 | 257 | 103 | 2 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 250 | ND | 0* [a] | ND | 0* [a] | nc | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 250 | 283 | 113 | 271 | 108 | 4 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 250 | 241 | 96 | 228 | 91 | 6 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 250 | 270 | 108 | 266 | 106 | 1 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 250 | 273 | 109 | 268 | 107 | 2 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 250 | 249 | 100 | 219 | 88 | 13 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 250 | 298 | 119 | 285 | 114 | 4 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 250 | 274 | 110 | 257 | 103 | 6 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 250 | 276 | 110 | 271 | 108 | 2 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 250 | 274 | 110 | 270 | 108 | 1 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 250 | 272 | 109 | 266 | 106 | 2 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 250 | 272 | 109 | 266 | 106 | 2 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | 3.5 | | 250 | 277 | 109 | 272 | 107 | 2 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 250 | 292 | 117 | 274 | 110 | 6 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | 1.5 | | 250 | 290 | 115 | 276 | 110 | 5 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | 1.5 | | 250 | 277 | 110 | 269 | 107 | 3 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 250 | 281 | 112 | 278 | 111 | 1 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 250 | 281 | 112 | 271 | 108 | 4 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 250 | 265 | 106 | 250 | 100 | 6 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3349-3MS | M43461.D | 5 | 09/20/11 | TD | n/a | n/a | MSM1397 |
| MC3349-3MSD | M43462.D | 5 | 09/20/11 | TD | n/a | n/a | MSM1397 |
| MC3349-3 | M43458.D | 1 | 09/20/11 | TD | n/a | n/a | MSM1397 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-11

| CAS No. | Compound | MC3349-3 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 250 | 201 | 80 | 191 | 76 | 5 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 250 | 294 | 118 | 283 | 113 | 4 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 250 | 238 | 95 | 233 | 93 | 2 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 250 | 255 | 102 | 242 | 97 | 5 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 1250 | 1070 | 86 | 876 | 70 | 20 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 250 | 242 | 97 | 218 | 87 | 10 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 250 | 280 | 112 | 277 | 111 | 1 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 250 | 347 | 139* [a] | 343 | 137* [a] | 1 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 250 | 237 | 95 | 201 | 80 | 16 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 250 | 321 | 128 | 321 | 128 | 0 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 250 | 298 | 119 | 292 | 117 | 2 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 250 | 253 | 101 | 238 | 95 | 6 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 250 | 242 | 97 | 211 | 84 | 14 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 250 | 284 | 114 | 262 | 105 | 8 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 250 | 272 | 109 | 263 | 105 | 3 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 250 | 257 | 103 | 230 | 92 | 11 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 250 | 277 | 111 | 274 | 110 | 1 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 250 | 264 | 106 | 258 | 103 | 2 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 250 | 294 | 118 | 286 | 114 | 3 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 250 | 246 | 98 | 226 | 90 | 8 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 250 | 306 | 122 | 297 | 119 | 3 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 250 | 290 | 116 | 279 | 112 | 4 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 250 | 274 | 110 | 257 | 103 | 6 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 250 | 286 | 114 | 275 | 110 | 4 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 250 | 312 | 125 | 295 | 118 | 6 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 250 | 277 | 111 | 264 | 106 | 5 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 250 | 289 | 116 | 281 | 112 | 3 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 250 | 297 | 119 | 283 | 113 | 5 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 250 | 233 | 93 | 212 | 85 | 9 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 250 | 267 | 107 | 266 | 106 | 0 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 250 | 269 | 108 | 266 | 106 | 1 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 250 | 164 | 66* [a] | 150 | 60* [a] | 9 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 250 | 224 | 90 | 225 | 90 | 0 | 70-130/30 |
| | m,p-Xylene | ND | | 500 | 580 | 116 | 572 | 114 | 1 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 250 | 290 | 116 | 289 | 116 | 0 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 750 | 870 | 116 | 861 | 115 | 1 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3349-3MS | M43461.D | 5 | 09/20/11 | TD | n/a | n/a | MSM1397 |
| MC3349-3MSD | M43462.D | 5 | 09/20/11 | TD | n/a | n/a | MSM1397 |
| MC3349-3 | M43458.D | 1 | 09/20/11 | TD | n/a | n/a | MSM1397 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-11

| CAS No. | Surrogate Recoveries | MS | MSD | MC3349-3 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 92% | 90% | 94% | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | 94% | 95% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | 93% | I00% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3617-17MS | V1961.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| MC3617-17MSD | V1962.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| MC3617-17 | V1960.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-5, MC3417-6, MC3417-7, MC3417-9

| CAS No. | Compound | MC3617-17 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 34.0 | | 56.5 | 97.0 | 112 | 97.8 | 122 | 1 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 282 | 721 | 255* [a] | 684 | 261* [a] | 5 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 56.5 | 286 | 506* [a] | 273 | 521* [a] | 5 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 56.5 | 54.5 | 96 | 52.6 | 100 | 4 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 56.5 | 45.5 | 81 | 45.2 | 86 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 56.5 | 47.2 | 84 | 44.4 | 85 | 6 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 56.5 | 50.8 | 90 | 48.8 | 93 | 4 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 56.5 | 45.2 | 80 | 43.0 | 82 | 5 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 56.5 | 51.2 | 91 | 48.8 | 93 | 5 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 56.5 | 87.6 | 155* [b] | 83.3 | 159* [b] | 5 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 56.5 | 48.2 | 85 | 50.4 | 96 | 4 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 56.5 | 54.5 | 96 | 59.6 | 114 | 9 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 56.5 | 59.8 | 106 | 66.6 | 127 | 11 | 70-130/30 |
| 75-15-0 | Carbon disulfide | 0.94 | | 56.5 | 37.9 | 65* [b] | 37.0 | 69* [b] | 2 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 56.5 | 52.8 | 93 | 51.9 | 99 | 2 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 56.5 | 44.4 | 79 | 42.3 | 81 | 5 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 56.5 | 58.2 | 103 | 55.3 | 105 | 5 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 56.5 | ND | 0* [b] | ND | 0* [b] | nc | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 56.5 | 54.9 | 97 | 52.9 | 101 | 4 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 56.5 | 51.8 | 92 | 48.4 | 92 | 7 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 56.5 | 54.6 | 97 | 58.2 | 111 | 6 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 56.5 | 48.7 | 86 | 48.7 | 93 | 0 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 56.5 | 62.5 | 111 | 63.1 | 120 | 1 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 56.5 | 50.9 | 90 | 49.8 | 95 | 2 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 56.5 | 45.0 | 80 | 41.4 | 79 | 8 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 56.5 | 44.5 | 79 | 43.8 | 84 | 2 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 56.5 | 40.9 | 72 | 39.4 | 75 | 4 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 56.5 | 37.8 | 67* [b] | 34.6 | 66* [b] | 9 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 56.5 | 43.0 | 76 | 41.7 | 80 | 3 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 56.5 | 61.8 | 109 | 59.3 | 113 | 4 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 56.5 | 52.9 | 94 | 49.4 | 94 | 7 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 56.5 | 50.7 | 90 | 48.6 | 93 | 4 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | 1.1 | | 56.5 | 46.3 | 80 | 44.2 | 82 | 5 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 56.5 | 43.4 | 77 | 40.8 | 78 | 6 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 56.5 | 56.0 | 99 | 53.7 | 102 | 4 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 56.5 | 52.1 | 92 | 50.2 | 96 | 4 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3617-17MS | V1961.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| MC3617-17MSD | V1962.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| MC3617-17 | V1960.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-5, MC3417-6, MC3417-7, MC3417-9

| CAS No. | Compound | MC3617-17 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 56.5 | 57.5 | 102 | 56.0 | 107 | 3 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 56.5 | 43.9 | 78 | 41.2 | 79 | 6 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 56.5 | 39.9 | 71 | 36.0 | 69* b | 10 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 56.5 | 35.0 | 62* b | 29.4 | 56* b | 17 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 282 | 492 | 174* b | 456 | 174* b | 8 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 56.5 | 63.9 | 113 | 59.7 | 114 | 7 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 56.5 | 49.6 | 88 | 48.9 | 93 | 1 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 56.5 | 35.4 | 63* b | 36.9 | 70 | 4 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 56.5 | 90.7 | 161* b | 86.2 | 164* b | 5 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 56.5 | 72.9 | 129 | 81.1 | 155* b | 11 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 56.5 | 55.1 | 98 | 59.2 | 113 | 7 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 56.5 | 65.3 | 116 | 63.9 | 122 | 2 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 56.5 | 98.9 | 175* b | 91.9 | 175* b | 7 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 56.5 | 44.3 | 78 | 40.7 | 78 | 8 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 56.5 | 55.0 | 97 | 53.4 | 102 | 3 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 56.5 | 25.7 | 45* b | 21.7 | 41* b | 17 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 56.5 | 56.2 | 99 | 59.3 | 113 | 5 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 56.5 | 39.7 | 70 | 37.3 | 71 | 6 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 56.5 | 54.9 | 97 | 57.0 | 109 | 4 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 56.5 | 83.4 | 148* b | 89.4 | 170* b | 7 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | 1.1 | | 56.5 | 47.9 | 83 | 47.5 | 88 | 1 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 56.5 | 47.3 | 84 | 45.0 | 86 | 5 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 56.5 | 24.6 | 44* b | 21.0 | 40* b | 16 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 56.5 | 26.0 | 46* b | 22.8 | 43* b | 13 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 56.5 | 55.7 | 99 | 54.7 | 104 | 2 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 56.5 | 55.0 | 97 | 52.4 | 100 | 5 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 56.5 | 41.6 | 74 | 39.1 | 75 | 6 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 56.5 | 51.3 | 91 | 48.3 | 92 | 6 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 56.5 | 69.6 | 123 | 72.0 | 137* b | 3 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 56.5 | 54.8 | 97 | 58.0 | 111 | 6 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 56.5 | 56.9 | 101 | 62.0 | 118 | 9 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 56.5 | 44.8 | 79 | 37.0 | 71 | 19 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 56.5 | 42.0 | 74 | 40.4 | 77 | 4 | 70-130/30 |
| | m,p-Xylene | ND | | 113 | 98.6 | 87 | 97.5 | 93 | 1 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 56.5 | 50.9 | 90 | 51.7 | 99 | 2 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 169 | 149 | 88 | 149 | 95 | 0 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3617-17MS | V1961.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| MC3617-17MSD | V1962.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| MC3617-17 | V1960.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-5, MC3417-6, MC3417-7, MC3417-9

| CAS No. | Surrogate Recoveries | MS | MSD | MC3617-17 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | 100% | 102% | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | 95% | 90% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 116% | 123% | 134%* [c] | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3762-3MS | V2008.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV87 |
| MC3762-3MSD | V2009.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV87 |
| MC3762-3 | V1996.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV87 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-4

| CAS No. | Compound | MC3762-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 50.3 | 137 | 272* [a] | 141 | 270* [a] | 3 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 252 | 975 | 388* [b] | 1020 | 391* [b] | 5 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 50.3 | 339 | 674* [b] | 343 | 658* [b] | 1 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 50.3 | 54.5 | 108 | 56.8 | 109 | 4 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 50.3 | 48.2 | 96 | 50.5 | 97 | 5 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 50.3 | 49.4 | 98 | 51.7 | 99 | 5 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 50.3 | 51.0 | 101 | 52.9 | 101 | 4 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 50.3 | 43.4 | 86 | 45.4 | 87 | 5 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 50.3 | 56.5 | 112 | 57.4 | 110 | 2 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 50.3 | 54.6 | 109 | 59.0 | 113 | 8 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 50.3 | 57.8 | 115 | 59.1 | 113 | 2 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 50.3 | 54.6 | 109 | 54.9 | 105 | 1 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 50.3 | 54.3 | 108 | 54.5 | 104 | 0 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 50.3 | 51.1 | 102 | 51.5 | 99 | 1 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 50.3 | 51.1 | 102 | 51.8 | 99 | I | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 50.3 | 53.6 | 107 | 55.9 | 107 | 4 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 50.3 | 65.1 | 129 | 65.2 | 125 | 0 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 50.3 | 10.6 | 21 | 11.3 | 22 | 6 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 50.3 | 54.0 | 107 | 55.6 | 107 | 3 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 50.3 | 56.8 | 113 | 57.2 | 110 | 1 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 50.3 | 51.2 | 102 | 52.8 | 101 | 3 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 50.3 | 52.1 | 104 | 53.5 | 103 | 3 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 50.3 | 46.8 | 93 | 49.7 | 95 | 6 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 50.3 | 49.1 | 98 | 51.2 | 98 | 4 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 50.3 | 49.3 | 98 | 52.0 | 100 | 5 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 50.3 | 52.5 | 104 | 54.9 | 105 | 4 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 50.3 | 48.5 | 96 | 50.8 | 97 | 5 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 50.3 | 47.4 | 94 | 49.9 | 96 | 5 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 50.3 | 57.1 | 113 | 56.8 | 109 | 1 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 50.3 | 57.6 | 114 | 59.2 | 114 | 3 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 50.3 | 55.0 | 109 | 57.4 | 110 | 4 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 50.3 | 56.8 | 113 | 57.8 | 111 | 2 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | 0.89 | J | 50.3 | 51.3 | 100 | 53.3 | 100 | 4 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 50.3 | 53.1 | 106 | 54.8 | 105 | 3 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 50.3 | 51.7 | 103 | 54.5 | 104 | 5 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 50.3 | 49.7 | 99 | 52.4 | 100 | 5 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3762-3MS | V2008.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV87 |
| MC3762-3MSD | V2009.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV87 |
| MC3762-3 | V1996.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV87 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-4

| CAS No. | Compound | MC3762-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 50.3 | 55.7 | 111 | 57.1 | 109 | 2 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 50.3 | 52.7 | 105 | 54.4 | 104 | 3 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 50.3 | 50.3 | 100 | 53.2 | 102 | 6 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 50.3 | 52.4 | 104 | 55.8 | 107 | 6 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 252 | 255 | 101 | 269 | 103 | 5 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 50.3 | 52.4 | 104 | 56.8 | 109 | 8 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 50.3 | 55.4 | 110 | 57.2 | 110 | 3 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 50.3 | 47.1 | 94 | 49.1 | 94 | 4 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 50.3 | 103 | 205* [a] | 109 | 209* [a] | 6 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 50.3 | 63.3 | 126 | 64.0 | 123 | 1 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 50.3 | 56.1 | 111 | 57.1 | 109 | 2 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 50.3 | 50.6 | 101 | 53.8 | 103 | 6 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 50.3 | 65.4 | 130 | 69.6 | 133* [a] | 6 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 50.3 | 51.7 | 103 | 54.0 | 104 | 4 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 50.3 | 58.1 | 115 | 60.0 | 115 | 3 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 50.3 | 45.9 | 91 | 50.5 | 97 | 10 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 50.3 | 54.5 | 108 | 55.2 | 106 | 1 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 50.3 | 52.5 | 104 | 54.8 | 105 | 4 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 50.3 | 51.6 | 103 | 53.2 | 102 | 3 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 50.3 | 52.9 | 105 | 54.4 | 104 | 3 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | 1.8 | | 50.3 | 51.6 | 99 | 52.5 | 97 | 2 | 70-130/30 |
| 108-88-3 | Toluene | 0.55 | J | 50.3 | 50.6 | 99 | 52.4 | 99 | 3 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 50.3 | 41.7 | 83 | 45.7 | 88 | 9 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 50.3 | 43.9 | 87 | 48.2 | 92 | 9 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 50.3 | 52.3 | 104 | 53.4 | 102 | 2 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 50.3 | 48.8 | 97 | 51.9 | 100 | 6 | 70-130/30 |
| 79-01-6 | Trichloroethene | 6.6 | | 50.3 | 54.4 | 95 | 56.4 | 95 | 4 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 50.3 | 53.2 | 106 | 52.3 | 100 | 2 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 50.3 | 53.2 | 106 | 56.6 | 109 | 6 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 50.3 | 52.6 | 105 | 53.9 | 103 | 2 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 50.3 | 53.1 | 106 | 53.9 | 103 | 1 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 50.3 | 36.3 | 72 | 36.7 | 70 | 1 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 50.3 | 48.7 | 97 | 48.9 | 94 | 0 | 70-130/30 |
| | m,p-Xylene | ND | | 101 | 111 | 110 | 115 | 110 | 4 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 50.3 | 53.4 | 106 | 56.0 | 107 | 5 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 151 | 164 | 109 | 171 | 109 | 4 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3762-3MS | V2008.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV87 |
| MC3762-3MSD | V2009.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV87 |
| MC3762-3 | V1996.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV87 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3417-4

| CAS No. | Surrogate Recoveries | MS | MSD | MC3762-3 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | 99% | 96% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 97% | 95% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 100% | 98% | 99% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Volatile Internal Standard Area Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSE2258-CC2241 | Injection Date: | 09/13/11 |
| Lab File ID: | E55531.D | Injection Time: | 13:19 |
| Instrument ID: | GCMSE | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 335123 | 9.11 | 520534 | 9.99 | 239374 | 13.25 | 214133 | 15.80 | 55253 | 6.63 |
| Upper Limit [a] | 670246 | 9.61 | 1041068 | 10.49 | 478748 | 13.75 | 428266 | 16.30 | 110506 | 7.13 |
| Lower Limit [b] | 167562 | 8.61 | 260267 | 9.49 | 119687 | 12.75 | 107067 | 15.30 | 27627 | 6.13 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSE2258-BS | 355697 | 9.11 | 528689 | 9.99 | 242482 | 13.25 | 219492 | 15.81 | 47469 | 6.63 |
| MSE2258-MB | 357868 | 9.11 | 537296 | 9.99 | 233225 | 13.25 | 221905 | 15.81 | 50470 | 6.64 |
| ZZZZZZ | 359624 | 9.11 | 542753 | 9.99 | 237793 | 13.25 | 223837 | 15.81 | 48011 | 6.64 |
| ZZZZZZ | 369526 | 9.11 | 547422 | 9.99 | 245285 | 13.25 | 224366 | 15.81 | 49074 | 6.64 |
| MC3464-4 | 377985 | 9.11 | 562678 | 9.99 | 250176 | 13.25 | 228884 | 15.81 | 57465 | 6.63 |
| ZZZZZZ | 369790 | 9.11 | 558433 | 9.99 | 245956 | 13.25 | 233626 | 15.81 | 52009 | 6.63 |
| MC3417-8 | 358874 | 9.12 | 527566 | 9.99 | 238204 | 13.26 | 226252 | 15.81 | 47124 | 6.63 |
| MC3417-10 | 373982 | 9.12 | 547775 | 9.99 | 248483 | 13.25 | 238940 | 15.81 | 55608 | 6.64 |
| ZZZZZZ | 373319 | 9.11 | 558195 | 9.99 | 250305 | 13.25 | 235476 | 15.81 | 49202 | 6.63 |
| ZZZZZZ | 379836 | 9.12 | 568192 | 9.99 | 246749 | 13.25 | 233969 | 15.81 | 47744 | 6.63 |
| MC3464-4MS | 385053 | 9.11 | 567882 | 9.99 | 260676 | 13.25 | 232226 | 15.81 | 51279 | 6.63 |
| MC3464-4MSD | 373454 | 9.11 | 553011 | 9.99 | 258010 | 13.25 | 235110 | 15.81 | 48985 | 6.64 |
| ZZZZZZ | 373437 | 9.11 | 561313 | 9.99 | 245213 | 13.25 | 243400 | 15.81 | 49823 | 6.63 |
| ZZZZZZ | 378827 | 9.12 | 566672 | 9.99 | 254967 | 13.25 | 237617 | 15.81 | 51937 | 6.63 |
| ZZZZZZ | 383200 | 9.11 | 566114 | 9.99 | 254980 | 13.25 | 240889 | 15.81 | 54787 | 6.63 |
| ZZZZZZ | 373948 | 9.11 | 556748 | 9.99 | 249771 | 13.25 | 235496 | 15.81 | 50569 | 6.64 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSE2261-CC2241 | Injection Date: | 09/22/11 |
| Lab File ID: | E55697.D | Injection Time: | 10:19 |
| Instrument ID: | GCMSE | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 350850 | 9.10 | 540303 | 9.98 | 256793 | 13.24 | 222349 | 15.79 | 52812 | 6.62 |
| Upper Limit [a] | 701700 | 9.60 | 1080606 | 10.48 | 513586 | 13.74 | 444698 | 16.29 | 105624 | 7.12 |
| Lower Limit [b] | 175425 | 8.60 | 270152 | 9.48 | 128397 | 12.74 | 111175 | 15.29 | 26406 | 6.12 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSE2261-BS | 334609 | 9.09 | 509979 | 9.97 | 243254 | 13.24 | 217157 | 15.79 | 47725 | 6.61 |
| MSE2261-MB | 342495 | 9.09 | 522270 | 9.97 | 241059 | 13.23 | 218663 | 15.80 | 54815 | 6.62 |
| ZZZZZZ | 331466 | 9.09 | 504668 | 9.97 | 228429 | 13.24 | 222710 | 15.79 | 50920 | 6.62 |
| MC3417-6 [c] | 338302 | 9.10 | 514281 | 9.98 | 238738 | 13.24 | 223972 | 15.79 | 44719 | 6.62 |
| ZZZZZZ | 340218 | 9.09 | 516192 | 9.97 | 233865 | 13.24 | 221080 | 15.80 | 44118 | 6.62 |
| ZZZZZZ | 342121 | 9.10 | 516172 | 9.98 | 233128 | 13.25 | 224310 | 15.80 | 46205 | 6.63 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Confirmation run.

# Volatile Internal Standard Area Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1397-CC1370 | Injection Date: | 09/20/11 |
| Lab File ID: | M43450.D | Injection Time: | 10:12 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 109446 | 9.19 | 166046 | 10.07 | 83433 | 13.34 | 102707 | 15.90 | 30416 | 6.74 |
| Upper Limit [a] | 218892 | 9.69 | 332092 | 10.57 | 166866 | 13.84 | 205414 | 16.40 | 60832 | 7.24 |
| Lower Limit [b] | 54723 | 8.69 | 83023 | 9.57 | 41717 | 12.84 | 51354 | 15.40 | 15208 | 6.24 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1397-BS2 | 121684 | 9.19 | 182417 | 10.07 | 89771 | 13.34 | 109320 | 15.90 | 34208 | 6.74 |
| MSM1397-MB2 | 109213 | 9.19 | 163818 | 10.07 | 76837 | 13.34 | 89777 | 15.90 | 32072 | 6.73 |
| ZZZZZZ | 107530 | 9.19 | 160285 | 10.07 | 77465 | 13.34 | 90331 | 15.90 | 31352 | 6.74 |
| ZZZZZZ | 103815 | 9.19 | 154676 | 10.07 | 74294 | 13.34 | 86473 | 15.90 | 29298 | 6.74 |
| ZZZZZZ | 102632 | 9.19 | 153902 | 10.07 | 71743 | 13.34 | 85214 | 15.90 | 29632 | 6.74 |
| MC3349-3 | 102041 | 9.19 | 153474 | 10.07 | 71491 | 13.34 | 83499 | 15.90 | 29658 | 6.74 |
| ZZZZZZ | 100892 | 9.19 | 149636 | 10.07 | 73009 | 13.34 | 84360 | 15.90 | 29883 | 6.74 |
| ZZZZZZ | 99316 | 9.19 | 147366 | 10.07 | 73290 | 13.34 | 84388 | 15.90 | 30552 | 6.74 |
| MC3349-3MS | 105891 | 9.19 | 160676 | 10.07 | 79409 | 13.34 | 97643 | 15.90 | 32041 | 6.74 |
| MC3349-3MSD | 112563 | 9.19 | 173694 | 10.07 | 84796 | 13.34 | 103107 | 15.90 | 27760 | 6.74 |
| ZZZZZZ | 109704 | 9.19 | 161739 | 10.07 | 78202 | 13.34 | 92664 | 15.90 | 28579 | 6.74 |
| ZZZZZZ | 106118 | 9.19 | 156096 | 10.07 | 75072 | 13.34 | 88450 | 15.90 | 24787 | 6.73 |
| ZZZZZZ | 104997 | 9.19 | 157129 | 10.07 | 73345 | 13.34 | 87163 | 15.90 | 23878 | 6.74 |
| ZZZZZZ | 100868 | 9.19 | 148466 | 10.07 | 73406 | 13.34 | 85896 | 15.90 | 23664 | 6.74 |
| ZZZZZZ | 97951 | 9.19 | 148477 | 10.07 | 73637 | 13.34 | 85316 | 15.90 | 25894 | 6.74 |
| ZZZZZZ | 103209 | 9.19 | 151561 | 10.07 | 75294 | 13.34 | 85866 | 15.90 | 27594 | 6.74 |
| ZZZZZZ | 101787 | 9.19 | 151366 | 10.07 | 73641 | 13.34 | 85679 | 15.90 | 28287 | 6.75 |
| MC3417-11 | 96499 | 9.19 | 144785 | 10.07 | 68862 | 13.34 | 81746 | 15.90 | 27459 | 6.74 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV78-CC67 | Injection Date: | 09/13/11 |
| Lab File ID: | V1775.D | Injection Time: | 08:45 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 408730 | 6.54 | 523731 | 7.73 | 305720 | 11.08 | 323421 | 13.31 | 84981 | 3.50 |
| Upper Limit [a] | 817460 | 7.04 | 1047462 | 8.23 | 611440 | 11.58 | 646842 | 13.81 | 169962 | 4.00 |
| Lower Limit [b] | 204365 | 6.04 | 261866 | 7.23 | 152860 | 10.58 | 161711 | 12.81 | 42491 | 3.00 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSV78-BS | 356169 | 6.54 | 525255 | 7.73 | 330260 | 11.08 | 314018 | 13.31 | 85278 | 3.50 |
| MSV78-MB | 328704 | 6.54 | 584366 | 7.73 | 250459 | 11.08 | 257961 | 13.31 | 80854 | 3.51 |
| ZZZZZZ | 329881 | 6.54 | 476237 | 7.73 | 262512 | 11.08 | 272798 | 13.31 | 71823 | 3.51 |
| ZZZZZZ | 288346 | 6.54 | 474397 | 7.73 | 243621 | 11.08 | 247952 | 13.31 | 68924 | 3.53 |
| ZZZZZZ | 211413 | 6.54 | 329309 | 7.73 | 170652 | 11.08 | 166793 | 13.31 | 40034[c] | 3.49 |
| ZZZZZZ | 320627 | 6.54 | 470985 | 7.73 | 234953 | 11.08 | 253534 | 13.31 | 64628 | 3.50 |
| ZZZZZZ | 8535[d] | 6.53 | 11015[d] | 7.72 | 6130[d] | 11.08 | 4733[d] | 13.31 | 2154[d] | 3.45 |
| ZZZZZZ | 265952 | 6.54 | 434390 | 7.73 | 236494 | 11.08 | 240713 | 13.32 | 66913 | 3.50 |
| ZZZZZZ | 126262[d] | 6.54 | 182702[d] | 7.73 | 111666[d] | 11.08 | 100335[d] | 13.32 | 31182[d] | 3.50 |
| ZZZZZZ | 269604 | 6.55 | 465229 | 7.74 | 300134 | 11.08 | 238645 | 13.32 | 111347 | 3.51 |
| ZZZZZZ | 187728[d] | 6.55 | 270701 | 7.73 | 91789[d] | 11.08 | 41497[d] | 13.32 | 116921 | 3.51 |
| ZZZZZZ | 303564 | 6.55 | 469933 | 7.74 | 307189 | 11.08 | 258638 | 13.32 | 125306 | 3.51 |
| ZZZZZZ | 262420 | 6.55 | 536951 | 7.74 | 223935 | 11.08 | 251220 | 13.32 | 73624 | 3.51 |
| ZZZZZZ | 261606 | 6.54 | 470347 | 7.73 | 289399 | 11.08 | 249909 | 13.32 | 73097 | 3.50 |
| ZZZZZZ | 9695[d] | 6.54 | 12879[d] | 7.73 | 8280[d] | 11.08 | 5427[d] | 13.32 | 2154[d] | 3.47 |
| ZZZZZZ | 203278[d] | 6.54 | 321410 | 7.73 | 172646 | 11.08 | 130117[d] | 13.32 | 56314 | 3.50 |
| MC3417-1 | 239727 | 6.55 | 367280 | 7.73 | 241395 | 11.08 | 280651 | 13.32 | 104781 | 3.51 |
| MC3417-2 | 247976 | 6.54 | 444089 | 7.73 | 240654 | 11.08 | 284417 | 13.32 | 94157 | 3.50 |
| MC3417-3 | 251526 | 6.55 | 429973 | 7.74 | 221742 | 11.08 | 255185 | 13.32 | 118133 | 3.52 |
| MC3417-3MS | 311391 | 6.54 | 463512 | 7.73 | 249763 | 11.08 | 266739 | 13.32 | 136591 | 3.51 |
| MC3417-3MSD | 318204 | 6.54 | 473472 | 7.73 | 264526 | 11.08 | 315643 | 13.31 | 145570 | 3.51 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits. Target analytes not associated with this internal standard.
(d) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Volatile Internal Standard Area Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV85-CC67 | Injection Date: | 09/21/11 |
| Lab File ID: | V1950.D | Injection Time: | 08:07 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 397958 | 6.51 | 595647 | 7.70 | 329521 | 11.06 | 341213 | 13.30 | I21049 | 3.48 |
| Upper Limit [a] | 795916 | 7.01 | 1191294 | 8.20 | 659042 | 11.56 | 682426 | 13.80 | 242098 | 3.98 |
| Lower Limit [b] | 198979 | 6.01 | 297824 | 7.20 | 164761 | 10.56 | 170607 | 12.80 | 60525 | 2.98 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSV85-BS | 410567 | 6.52 | 622583 | 7.71 | 347899 | 11.07 | 356483 | 13.30 | 116707 | 3.49 |
| MSV85-MB | 368939 | 6.51 | 568634 | 7.70 | 316528 | 11.06 | 324563 | 13.30 | 120778 | 3.48 |
| ZZZZZZ | 353500 | 6.52 | 546672 | 7.71 | 303298 | 11.06 | 309222 | 13.30 | 104006 | 3.49 |
| ZZZZZZ | 360160 | 6.51 | 55776I | 7.71 | 309868 | 11.06 | 320685 | 13.30 | 101378 | 3.49 |
| ZZZZZZ | 341074 | 6.51 | 532521 | 7.70 | 292421 | 11.06 | 288089 | 13.30 | 117555 | 3.49 |
| ZZZZZZ | 368867 | 6.52 | 569977 | 7.71 | 321050 | 11.07 | 333789 | 13.30 | 121617 | 3.49 |
| ZZZZZZ | 329317 | 6.51 | 511857 | 7.70 | 281890 | 11.06 | 264193 | 13.30 | 102181 | 3.48 |
| ZZZZZZ | 320859 | 6.51 | 504376 | 7.70 | 280408 | 11.06 | 280834 | 13.30 | 115761 | 3.49 |
| MC3417-7 | 326932 | 6.52 | 525081 | 7.71 | 301075 | 11.07 | 313I55 | 13.30 | 153355 | 3.49 |
| MC3617-17 | 304046 | 6.51 | 470396 | 7.71 | 200905 | 11.07 | 109740[c] | 13.30 | 158485 | 3.49 |
| MC3617-17MS | 337866 | 6.51 | 513316 | 7.70 | 264849 | 11.07 | 205372 | 13.30 | 164775 | 3.48 |
| MC3617-17MSD | 340103 | 6.51 | 514449 | 7.71 | 253134 | 11.07 | 177610 | 13.30 | 158178 | 3.48 |
| MC3417-5 | 341779 | 6.52 | 526972 | 7.71 | 302527 | 11.07 | 299091 | 13.30 | 140540 | 3.48 |
| MC3417-6 | 74894[c] | 6.51 | 120924[c] | 7.71 | 71581[c] | 11.07 | 70105[c] | 13.30 | 42576[c] | 3.46 |
| MC3417-9 | 327720 | 6.52 | 525643 | 7.71 | 300318 | 11.07 | 301706 | 13.30 | 154561 | 3.49 |
| ZZZZZZ | 299273 | 6.51 | 472344 | 7.70 | 264278 | 11.07 | 260083 | 13.30 | 92300 | 3.48 |
| ZZZZZZ | 346342 | 6.52 | 541991 | 7.71 | 309503 | 11.07 | 319149 | 13.30 | 147603 | 3.50 |
| ZZZZZZ | 347782 | 6.52 | 544578 | 7.71 | 311445 | 11.07 | 320988 | 13.30 | 150552 | 3.49 |
| ZZZZZZ | 349694 | 6.52 | 544165 | 7.71 | 313558 | 11.07 | 323277 | 13.30 | 158756 | 3.49 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Volatile Internal Standard Area Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV87-CC67 | Injection Date: | 09/22/11 |
| Lab File ID: | V1989.D | Injection Time: | 09:16 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 350785 | 6.52 | 525385 | 7.71 | 286483 | 11.07 | 293627 | 13.30 | 107422 | 3.49 |
| Upper Limit [a] | 701570 | 7.02 | 1050770 | 8.21 | 572966 | 11.57 | 587254 | 13.80 | 214844 | 3.99 |
| Lower Limit [b] | 175393 | 6.02 | 262693 | 7.21 | 143242 | 10.57 | 146814 | 12.80 | 53711 | 2.99 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSV87-BS | 370652 | 6.52 | 555745 | 7.72 | 298842 | 11.07 | 300221 | 13.30 | 102208 | 3.50 |
| MSV86-BS1 | 370652 | 6.52 | 555745 | 7.72 | 298842 | 11.07 | 300221 | 13.30 | 102208 | 3.50 |
| MSV86-MB1 | 341641 | 6.52 | 531634 | 7.71 | 281828 | 11.07 | 282447 | 13.30 | 95498 | 3.49 |
| MSV87-MB | 341641 | 6.52 | 531634 | 7.71 | 281828 | 11.07 | 282447 | 13.30 | 95498 | 3.49 |
| MC3417-4 | 311583 | 6.53 | 487609 | 7.72 | 261675 | 11.07 | 231852 | 13.30 | 156890 | 3.49 |
| ZZZZZZ | 319246 | 6.52 | 496837 | 7.71 | 272589 | 11.07 | 277491 | 13.30 | 164518 | 3.50 |
| ZZZZZZ | 156824[c] | 6.52 | 231049[c] | 7.72 | 95288[c] | 11.07 | 51274[c] | 13.30 | 80505 | 3.49 |
| ZZZZZZ | 343107 | 6.53 | 504762 | 7.72 | 274591 | 11.07 | 240147 | 13.30 | 145295 | 3.50 |
| MC3762-3 | 326380 | 6.53 | 503124 | 7.72 | 263762 | 11.07 | 244470 | 13.31 | 85199 | 3.49 |
| ZZZZZZ | 332240 | 6.52 | 507298 | 7.71 | 270916 | 11.07 | 257490 | 13.31 | 92189 | 3.49 |
| ZZZZZZ | 333367 | 6.53 | 516097 | 7.72 | 278564 | 11.07 | 272720 | 13.31 | 90029 | 3.50 |
| ZZZZZZ | 293668 | 6.52 | 465641 | 7.71 | 249106 | 11.07 | 237681 | 13.31 | 91459 | 3.48 |
| ZZZZZZ | 330759 | 6.52 | 507670 | 7.71 | 273405 | 11.07 | 273520 | 13.31 | 110633 | 3.49 |
| ZZZZZZ | 317974 | 6.53 | 493929 | 7.72 | 264937 | 11.07 | 256556 | 13.31 | 91987 | 3.49 |
| ZZZZZZ | 280663 | 6.53 | 442554 | 7.72 | 231297 | 11.07 | 198979 | 13.31 | 95084 | 3.50 |
| ZZZZZZ | 313198 | 6.53 | 481722 | 7.72 | 256745 | 11.07 | 242074 | 13.31 | 90547 | 3.50 |
| ZZZZZZ | 310402 | 6.53 | 485760 | 7.72 | 263145 | 11.07 | 259102 | 13.31 | 89938 | 3.50 |
| ZZZZZZ | 325975 | 6.53 | 499785 | 7.72 | 272503 | 11.07 | 272734 | 13.31 | 103185 | 3.51 |
| ZZZZZZ | 308196 | 6.53 | 483901 | 7.72 | 257923 | 11.07 | 242672 | 13.31 | 89372 | 3.49 |
| ZZZZZZ | 314190 | 6.53 | 494906 | 7.72 | 268847 | 11.07 | 263972 | 13.31 | 97885 | 3.50 |
| MC3762-3MS | 333861 | 6.53 | 503999 | 7.72 | 265065 | 11.07 | 254574 | 13.31 | 96081 | 3.50 |
| MC3762-3MSD | 336218 | 6.53 | 506172 | 7.72 | 268940 | 11.07 | 262217 | 13.31 | 102149 | 3.50 |
| MC3492-6MS | 335420 | 6.53 | 512030 | 7.72 | 279333 | 11.07 | 276141 | 13.31 | 152971 | 3.50 |
| MC3492-6MSD | 354401 | 6.52 | 542941 | 7.72 | 294782 | 11.07 | 292820 | 13.31 | 158485 | 3.49 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Volatile Surrogate Recovery Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3417-11 | M43470.D | 95.0 | 95.0 | 96.0 |
| MC3349-3MS | M43461.D | 92.0 | 95.0 | 96.0 |
| MC3349-3MSD | M43462.D | 90.0 | 94.0 | 93.0 |
| MSM1397-BS2 | M43452.D | 88.0 | 95.0 | 97.0 |
| MSM1397-MB2 | M43454.D | 92.0 | 95.0 | 99.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3417-1 | V1793.D | 102.0 | 106.0 | 81.0 |
| MC3417-2 | V1794.D | 101.0 | 91.0 | 82.0 |
| MC3417-3 | V1795.D | 110.0 | 98.0 | 92.0 |
| MC3417-4 | V1992.D | 101.0 | 96.0 | 103.0 |
| MC3417-5 | V1964.D | 93.0 | 99.0 | 102.0 |
| MC3417-6 | E55702.D | 98.0 | 108.0 | 98.0 |
| MC3417-6 | V1965.D | 103.0 | 93.0 | 88.0 |
| MC3417-7 | V1959.D | 99.0 | 96.0 | 96.0 |
| MC3417-8 | E55539.D | 96.0 | 108.0 | 105.0 |
| MC3417-9 | V1966.D | 98.0 | 95.0 | 99.0 |
| MC3417-10 | E55540.D | 96.0 | 111.0 | 100.0 |
| MC3417-3MS | V1796.D | 97.0 | 92.0 | 110.0 |
| MC3417-3MSD | V1797.D | 105.0 | 101.0 | 85.0 |
| MC3464-4MS | E55543.D | 91.0 | 103.0 | 99.0 |
| MC3464-4MSD | E55544.D | 92.0 | 106.0 | 102.0 |
| MC3617-17MS | V1961.D | 100.0 | 95.0 | 116.0 |
| MC3617-17MSD | V1962.D | 100.0 | 95.0 | 123.0 |
| MC3762-3MS | V2008.D | 100.0 | 98.0 | 100.0 |
| MC3762-3MSD | V2009.D | 99.0 | 97.0 | 98.0 |
| MSE2258-BS | E55532.D | 93.0 | 107.0 | 104.0 |
| MSE2258-MB | E55534.D | 92.0 | 103.0 | 101.0 |
| MSV78-BS | V1776.D | 98.0 | 101.0 | 102.0 |
| MSV78-MB | V1778.D | 98.0 | 97.0 | 102.0 |
| MSV85-BS | V1951.D | 95.0 | 97.0 | 97.0 |
| MSV85-MB | V1952.D | 94.0 | 95.0 | 95.0 |
| MSV87-BS | V1990.D | 99.0 | 99.0 | 97.0 |
| MSV87-MB | V1991.D | 98.0 | 95.0 | 95.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

New England ACCUTEST LABORATORIES

# GC Volatiles



## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytieal Batch |
|---|---|---|---|---|---|---|---|
| GBH1310-MB | BH23814A.D1 | | 09/12/11 | AF | n/a | n/a | GBH1310 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3417-1, MC3417-2, MC3417-3, MC3417-4, MC3417-5, MC3417-6, MC3417-7, MC3417-8, MC3417-9, MC3417-10



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 3.6 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 86% | 36-148% |

# Blank Spike Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1310-BSP | BH23815A.D | 1 | 09/12/11 | AF | n/a | n/a | GBH1310 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3417-1, MC3417-2, MC3417-3, MC3417-4, MC3417-5, MC3417-6, MC3417-7, MC3417-8, MC3417-9, MC3417-10

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 19.1 | 96 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 91% | 36-148% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3417-1MS | BH23824.D | 1 | 09/12/11 | AF | n/a | n/a | GBH1310 |
| MC3417-1MSD | BH23825.D | 1 | 09/12/11 | AF | n/a | n/a | GBH1310 |
| MC3417-1 | BH23823.D | 1 | 09/12/11 | AF | n/a | n/a | GBH1310 |



The QC reported here applies to the following samples: Method: SW846 8015

MC3417-1, MC3417-2, MC3417-3, MC3417-4, MC3417-5, MC3417-6, MC3417-7, MC3417-8, MC3417-9, MC3417-10

| CAS No. | Compound | MC3417-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 46.4 | 43.2 | 93 | 42.3 | 91 | 2 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3417-1 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 95% | 98% | 97% | 36-148% |

# Volatile Surrogate Recovery Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3417-1 | BH23823.D | 97.0 |
| MC3417-2 | BH23830.D | 93.0 |
| MC3417-3 | BH23831.D | 89.0 |
| MC3417-4 | BH23832.D | 83.0 |
| MC3417-5 | BH23834.D | 87.0 |
| MC3417-6 | BH23835.D | 91.0 |
| MC3417-7 | BH23836.D | 89.0 |
| MC3417-8 | BH23837.D | 98.0 |
| MC3417-9 | BH23838.D | 90.0 |
| MC3417-10 | BH23839.D | 89.0 |
| GBH1310-BSP | BH23815A.D | 91.0 |
| GBH1310-MB | BH23814A.D | 86.0 |
| MC3417-1MS | BH23824.D | 95.0 |
| MC3417-1MSD | BH23825.D | 98.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1309-CC1043 | Injection Date: | 09/12/11 |
| Lab File ID: | BH23813.D | Injection Time: | 08:49 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1309-MB | BH23814.D | 09/12/11 | 09:28 | 32.40 |
| GBH1310-MB | BH23814A.D | 09/12/11 | 09:28 | 32.40 |
| GBH1309-BSP | BH23815.D | 09/12/11 | 10:08 | 32.40 |
| GBH1310-BSP | BH23815A.D | 09/12/11 | 10:08 | 32.40 |
| MC3391-4 | BH23816.D | 09/12/11 | 10:49 | 32.39 |
| MC3391-4MS | BH23817.D | 09/12/11 | 11:30 | 32.40 |
| MC3391-4MSD | BH23818.D | 09/12/11 | 12:17 | 32.40 |
| ZZZZZZ | BH23819.D | 09/12/11 | 12:57 | 32.39 |
| ZZZZZZ | BH23820.D | 09/12/11 | 13:37 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3417
Account: SHELLW1C Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1310-CC1043 | Injection Date: | 09/12/11 |
| Lab File ID: | BH23813A.D | Injection Time: | 08:49 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1309-MB | BH23814.D | 09/12/11 | 09:28 | 32.40 |
| GBH1310-MB | BH23814A.D | 09/12/11 | 09:28 | 32.40 |
| GBH1309-BSP | BH23815.D | 09/12/11 | 10:08 | 32.40 |
| GBH1310-BSP | BH23815A.D | 09/12/11 | 10:08 | 32.40 |
| MC3391-4 | BH23816.D | 09/12/11 | 10:49 | 32.39 |
| MC3391-4MS | BH23817.D | 09/12/11 | 11:30 | 32.40 |
| MC3391-4MSD | BH23818.D | 09/12/11 | 12:17 | 32.40 |
| ZZZZZZ | BH23819.D | 09/12/11 | 12:57 | 32.39 |
| ZZZZZZ | BH23820.D | 09/12/11 | 13:37 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1310-CC1043 | Injection Date: | 09/12/11 |
| Lab File ID: | BH23822A.D | Injection Time: | 14:57 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3417-1 | BH23823.D | 09/12/11 | 15:38 | 32.40 |
| MC3417-1MS | BH23824.D | 09/12/11 | 16:18 | 32.40 |
| MC3417-1MSD | BH23825.D | 09/12/11 | 16:58 | 32.40 |
| ZZZZZZ | BH23826.D | 09/12/11 | 17:38 | 32.40 |
| ZZZZZZ | BH23827.D | 09/12/11 | 18:18 | 32.40 |
| MC3417-2 | BH23830.D | 09/12/11 | 20:18 | 32.40 |
| MC3417-3 | BH23831.D | 09/12/11 | 20:59 | 32.40 |
| MC3417-4 | BH23832.D | 09/12/11 | 21:39 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1309-CC1043 | Injection Date: | 09/12/11 |
| Lab File ID: | BH23822.D | Injection Time: | 14:57 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3417-1 | BH23823.D | 09/12/11 | 15:38 | 32.40 |
| MC3417-1MS | BH23824.D | 09/12/11 | 16:18 | 32.40 |
| MC3417-1MSD | BH23825.D | 09/12/11 | 16:58 | 32.40 |
| ZZZZZZ | BH23826.D | 09/12/11 | 17:38 | 32.40 |
| ZZZZZZ | BH23827.D | 09/12/11 | 18:18 | 32.40 |
| MC3417-2 | BH23830.D | 09/12/11 | 20:18 | 32.40 |
| MC3417-3 | BH23831.D | 09/12/11 | 20:59 | 32.40 |
| MC3417-4 | BH23832.D | 09/12/11 | 21:39 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1309-CC1043 | Injection Date: | 09/12/11 |
| Lab File ID: | BH23833.D | Injection Time: | 22:19 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3417-5 | BH23834.D | 09/12/11 | 22:58 | 32.40 |
| MC3417-6 | BH23835.D | 09/12/11 | 23:38 | 32.40 |
| MC3417-7 | BH23836.D | 09/13/11 | 00:17 | 32.40 |
| MC3417-8 | BH23837.D | 09/13/11 | 00:57 | 32.40 |
| MC3417-9 | BH23838.D | 09/13/11 | 01:36 | 32.40 |
| MC3417-10 | BH23839.D | 09/13/11 | 02:16 | 32.40 |
| ZZZZZZ | BH23840.D | 09/13/11 | 02:56 | 32.40 |
| ZZZZZZ | BH23841.D | 09/13/11 | 03:35 | 32.40 |
| ZZZZZZ | BH23842.D | 09/13/11 | 04:15 | 32.40 |
| ZZZZZZ | BH23843.D | 09/13/11 | 04:55 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1310-CC1043 | Injection Date: | 09/12/11 |
| Lab File ID: | BH23833A.D | Injection Time: | 22:19 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3417-5 | BH23834.D | 09/12/11 | 22:58 | 32.40 |
| MC3417-6 | BH23835.D | 09/12/11 | 23:38 | 32.40 |
| MC3417-7 | BH23836.D | 09/13/11 | 00:17 | 32.40 |
| MC3417-8 | BH23837.D | 09/13/11 | 00:57 | 32.40 |
| MC3417-9 | BH23838.D | 09/13/11 | 01:36 | 32.40 |
| MC3417-10 | BH23839.D | 09/13/11 | 02:16 | 32.40 |
| ZZZZZZ | BH23840.D | 09/13/11 | 02:56 | 32.40 |
| ZZZZZZ | BH23841.D | 09/13/11 | 03:35 | 32.40 |
| ZZZZZZ | BH23842.D | 09/13/11 | 04:15 | 32.40 |
| ZZZZZZ | BH23843.D | 09/13/11 | 04:55 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

6.5.6

6

New England ACCUTEST LABORATORIES

## GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26262-MB | BG31013.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3417-1, MC3417-2, MC3417-3, MC3417-4, MC3417-5, MC3417-6, MC3417-7, MC3417-8, MC3417-9, MC3417-10

7.1.1

7

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 16 | 11 | mg/kg | |
| | TPH (> C28-C40) | ND | 16 | 11 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 90% | 24-147% |

# Blank Spike Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26262-BS | BG31014.D | 1 | 09/21/1I | KD | 09/15/11 | OP26262 | GBG1104 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3417-1, MC3417-2, MC3417-3, MC3417-4, MC3417-5, MC3417-6, MC3417-7, MC3417-8, MC3417-9, MC3417-10

7.2.1

7

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 160 | 143 | 89 | 63-139 |
| | TPH (> C28-C40) | 160 | 103 | 64 | 46-103 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 100% | 24-147% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26262-MS | BG31015.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| OP26262-MSD | BG31016.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| MC3492-6 | BG31017.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3417-1, MC3417-2, MC3417-3, MC3417-4, MC3417-5, MC3417-6, MC3417-7, MC3417-8, MC3417-9, MC3417-10



| CAS No. | Compound | MC3492-6 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 184 | 128 | 69 | 119 | 65 | 7 | 8-154/127 |
| | TPH (>C28-C40) | ND | | 184 | 91.1 | 49 | 83.9 | 46 | 8 | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3492-6 | Limits |
|---|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 74% | 71% | 67% | 24-147% |

# Semivolatile Surrogate Recovery Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Method: SW846-8015 | Matrix: SO |
|---|---|

Samples and QC shown here apply to the above method.

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3417-1 | BG31021.D | 68.0 |
| MC3417-2 | BG31022.D | 72.0 |
| MC3417-3 | BG31024.D | 60.0 |
| MC3417-4 | BG31035.D | 77.0 |
| MC3417-5 | BG31036.D | 82.0 |
| MC3417-6 | BG31031.D | 67.0 |
| MC3417-7 | BG31029.D | 65.0 |
| MC3417-8 | BG31030.D | 65.0 |
| MC3417-9 | BG31033.D | 82.0 |
| MC3417-10 | BG31032.D | 72.0 |
| OP26262-BS | BG31014.D | 100.0 |
| OP26262-MB | BG31013.D | 90.0 |
| OP26262-MS | BG31015.D | 74.0 |
| OP26262-MSD | BG31016.D | 71.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 1-Chlorooctadecane | 24-147% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1104-CC1103 | Injection Date: | 09/21/11 |
| Lab File ID: | BG31012.D | Injection Time: | 09:40 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.97 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26262-MB | BG31013.D | 09/21/11 | 10:30 | 14.99 |
| OP26262-BS | BG31014.D | 09/21/11 | 11:16 | 14.99 |
| OP26262-MS | BG31015.D | 09/21/11 | 12:02 | 14.99 |
| OP26262-MSD | BG31016.D | 09/21/11 | 12:48 | 14.99 |
| MC3492-6 | BG31017.D | 09/21/11 | 13:34 | 14.99 |
| ZZZZZZ | BG31018.D | 09/21/11 | 14:20 | 14.99 |
| ZZZZZZ | BG31019.D | 09/21/11 | 15:05 | 14.99 |
| ZZZZZZ | BG31020.D | 09/21/11 | 15:51 | 14.98 |
| MC3417-1 | BG31021.D | 09/21/11 | 16:37 | 14.99 |
| MC3417-2 | BG31022.D | 09/21/11 | 17:23 | 14.99 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.1

7

# GC Surrogate Retention Time Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1104-CC1103 | Injection Date: | 09/21/11 |
| Lab File ID: | BG31023.D | Injection Time: | 18:09 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.97 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3417-3 | BG31024.D | 09/21/11 | 18:54 | 14.99 |
| ZZZZZZ | BG31025.D | 09/21/11 | 19:40 | 14.99 |
| ZZZZZZ | BG31026.D | 09/21/11 | 20:26 | 14.99 |
| ZZZZZZ | BG31027.D | 09/21/11 | 21:12 | 14.99 |
| ZZZZZZ | BG31028.D | 09/21/11 | 21:58 | 14.99 |
| MC3417-7 | BG31029.D | 09/21/11 | 22:44 | 14.99 |
| MC3417-8 | BG31030.D | 09/21/11 | 23:30 | 14.99 |
| MC3417-6 | BG31031.D | 09/22/11 | 00:16 | 14.99 |
| MC3417-10 | BG31032.D | 09/22/11 | 01:02 | 14.99 |
| MC3417-9 | BG31033.D | 09/22/11 | 01:48 | 14.99 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.2

7

# GC Surrogate Retention Time Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1104-CC1103 | Injection Date: | 09/22/11 |
| Lab File ID: | BG31034.D | Injection Time: | 02:34 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.97 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3417-4 | BG31035.D | 09/22/11 | 03:20 | 14.99 |
| MC3417-5 | BG31036.D | 09/22/11 | 04:05 | 14.99 |
| ZZZZZZ | BG31037.D | 09/22/11 | 04:51 | 14.99 |
| GBG1104-ECC110 | BG31039.D | 09/22/11 | 06:23 | 14.97 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

New England ACCUTEST LABORATORIES

## General Chemistry

# QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC3417-1 Analyzed: 12-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP-41(10-12.5)-090811

| | | |
|---|---|---|
| Wet Weight (Total) | 34.459 | g |
| Tare Weight | 26.622 | g |
| Dry Weight (Total) | 34.165 | g |
| Solids, Percent | 96.2 | % |

Sample: MC3417-2 Analyzed: 12-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP-41(20-22.5)-090811

| | | |
|---|---|---|
| Wet Weight (Total) | 25.607 | g |
| Tare Weight | 18.25 | g |
| Dry Weight (Total) | 25.415 | g |
| Solids, Percent | 97.4 | % |

Sample: MC3417-3 Analyzed: 12-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE-21(30-32)-090811

| | | |
|---|---|---|
| Wet Weight (Total) | 30.3 | g |
| Tare Weight | 21.411 | g |
| Dry Weight (Total) | 29.862 | g |
| Solids, Percent | 95.1 | % |

Sample: MC3417-4 Analyzed: 12-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE-22(30-32)-090811

| | | |
|---|---|---|
| Wet Weight (Total) | 30.886 | g |
| Tare Weight | 22.753 | g |
| Dry Weight (Total) | 29.863 | g |
| Solids, Percent | 87.4 | % |

Sample: MC3417-5 Analyzed: 12-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP-43(9-10)-090811

| | | |
|---|---|---|
| Wet Weight (Total) | 33.834 | g |
| Tare Weight | 25.845 | g |
| Dry Weight (Total) | 32.789 | g |
| Solids, Percent | 86.9 | % |

Sample: MC3417-6 Analyzed: 12-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE-23(24-26)-090811

| | | |
|---|---|---|
| Wet Weight (Total) | 28.729 | g |
| Tare Weight | 19.732 | g |
| Dry Weight (Total) | 27.262 | g |
| Solids, Percent | 83.7 | % |

8.1

8

# Percent Solids Raw Data Summary



Job Number: MC3417
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

**Sample:** MC3417-7 **Analyzed:** 12-SEP-11 by HS **Method:** SM21 2540 B MOD.
**ClientID:** SVE-27(30-32)-090711

| | | |
|---|---|---|
| Wet Weight (Total) | 26.835 | g |
| Tare Weight | 18.812 | g |
| Dry Weight (Total) | 26.502 | g |
| Solids, Percent | 95.8 | % |

**Sample:** MC3417-8 **Analyzed:** 12-SEP-11 by HS **Method:** SM21 2540 B MOD.
**ClientID:** SVE-24(30-34)-090711

| | | |
|---|---|---|
| Wet Weight (Total) | 28.846 | g |
| Tare Weight | 21.068 | g |
| Dry Weight (Total) | 27.608 | g |
| Solids, Percent | 84.1 | % |

**Sample:** MC3417-9 **Analyzed:** 12-SEP-11 by HS **Method:** SM21 2540 B MOD.
**ClientID:** VMP-42(9-10)-090811

| | | |
|---|---|---|
| Wet Weight (Total) | 24.698 | g |
| Tare Weight | 18.617 | g |
| Dry Weight (Total) | 24.235 | g |
| Solids, Percent | 92.4 | % |

**Sample:** MC3417-10 **Analyzed:** 12-SEP-11 by HS **Method:** SM21 2540 B MOD.
**ClientID:** SVE-26(30-32)-090711

| | | |
|---|---|---|
| Wet Weight (Total) | 28.991 | g |
| Tare Weight | 18.844 | g |
| Dry Weight (Total) | 27.166 | g |
| Solids, Percent | 82 | % |

# SVE Install 2011 Data Review

**Laboratory SDG: MC3458**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 12/19/2011**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| VMP-41 (25-27) 090911 | VMP-43 (10-12.5) 090911 |
| VMP-43 (20-22.5) 090911 | VMP-43 (30-31.5) 090911 |
| TB-090911 | |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS recoveries were outside evaluation criteria. Professional judgment was used to evaluate and qualify data. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 1.9°C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSV85-BS | VOCs | Acetone | **158** | NA | 70-130 |
| MSV85-BS | VOCs | Acrolein | **317** | NA | 70-130 |
| MSV85-BS | VOCs | Acrylonitrile | **646** | NA | 70-130 |

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSM1398-BS | VOCs | Acrylonitrile | **452** | NA | 70-130 |
| MSM1398-BS | VOCs | Hexachlorobutadiene | **152** | NA | 70-130 |

Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

**6.0 Surrogate Recoveries**

*Were surrogate recoveries within evaluation criteria?*

Yes

**7.0 Matrix Spike and Matrix Spike Duplicate Recoveries**

*Were MS/MSD samples analyzed as part of this SDG?*

No

**8.0 Internal Standard (IS) Recoveries**

*Were internal standard area recoveries within evaluation criteria?*

Yes

**9.0 Laboratory Duplicate Results**

*Were laboratory duplicate samples collected as part of this SDG?*

No

**10.0 Field Duplicate Results**

*Were field duplicate samples collected as part of this SDG?*

No

**11.0 Sample Dilutions**

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

**12.0 Additional Qualifications**

*Were additional qualifications applied?*

Yes, professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations less than two times (2X) the reporting limit (RL). Additionally, USEPA Method 5035A states that acidification of certain soils with sodium bisulfate may produce a false positive acetone artifact of 100-200 ppb, or more. Acetone reported at concentrations less than 200 ppb (ug/kg) were qualified.

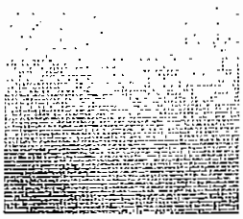
| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| VMP-43 (30-31.5) 090911 | Acetone | - | **U** | Professional Judgment |
| VMP-43 (20-22.5) 090911 | Acetone | 7.2 ug/kg | **U** | Professional Judgment |

Additionally, professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations greater than two times (2X) the reporting limit (RL), since acetone is not representative of site conditions.

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| VMP-43 (10-12.5) 090911 | Acetone | 14.1 ug/kg | **U** | Professional Judgment |

New England ACCUTEST LABORATORIES

11/23/11





## Technical Report for

## Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC3458

Sampling Date: 09/09/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: 79

Reviewed on 12/19/2011

Reza Pand
Lab Director

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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# Sample Summary

Shell Oil

Job No: MC3458

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|
| MC3458-1 | 09/09/11 | 10:30 SWLR | 09/10/11 | SO | Soil | VMP-41 (25-27)090911 |
| MC3458-2 | 09/09/11 | 13:40 SWLR | 09/10/11 | SO | Soil | VMP-43 (10-12.5)090911 |
| MC3458-3 | 09/09/11 | 13:50 SWLR | 09/10/11 | SO | Soil | VMP-43 (20-22.5)090911 |
| MC3458-4 | 09/09/11 | 16:00 SWLR | 09/10/11 | SO | Soil | VMP-43 (30-31.5)090911 |
| MC3458-5 | 09/09/11 | 17:00 SWLR | 09/10/11 | AQ | Trip Blank Water | TB-090911 (TRIP BLANK) |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC3458 |
| **Site:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Ra | **Report Date** | 9/27/2011 8:18:00 AM |

4 Sample(s), 1 Trip Blank were eolleeted on 09/09/2011 and were received at Aeeutest on 09/10/2011 properly preserved, at 1.9 Deg. C and intaet. These Samples reeeived an Accutest job number of MC3458. A listing of the Laboratory Sample ID, Client Sample ID and dates of eolleetion are presented in the Results Summary Section of this report.

Exeept as noted below, all method speeified ealibrations and quality control performance eriteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSM1398

- All samples were analyzed within the reeommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3557-7MS, MC3557-7MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Vinyl Acetate are outside control limits. Blank Spike meets program teehnieal requirements.
- Matrix Spike Reeovery(s) for 2-Chloroethyl vinyl ether, Isopropylbenzene, Vinyl Acetate are outside eontrol limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplieate Recovery(s) for 2-Chloroethyl vinyl ether are outside control limits. Outside eontrol limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 2-Chloroethyl vinyl ether are outside control limits for sample MC3557-7MSD. High RPD due to possible matrix interferenee and/or sample non-homogeneity.
- MC3557-7MS/MSD for Aerolein, Acrylonitrile, Hexachlorobutadiene: Outside control limits. Associated samples are non-deteet for this compound.
- MSM1398-BS for Acrylonitrile, Hexachlorobutadiene: Outside control limits. Assoeiated samples are non-deteet for this eompound.

**Matrix** SO **Batch ID:** MSV85

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3617-17MS, MC3617-17MSD were used as the QC samples indieated.
- All method blanks for this bateh meet method speeific eriteria.
- Blank Spike Recovery(s) for Aeetone are outside control limits. Blank Spike meets program teehnical requirements.
- Matrix Spike Recovery(s) for 1,1,2,2-Tetraehloroethane, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,4-Diehlorobenzene, 1,4-Dioxane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Hexachlorobutadiene, Naphthalene, trans-1,3-Dichloropropene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplieate Reeovery(s) for 1,1,2,2-Tetrachloroethane, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,4-Diehlorobenzene, 1,4-Dioxane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Aerolein, Carbon disulfide, cis-1,3-Dichloropropene, Isopropylbenzene, Naphthalene, trans-1,3-Dichloropropene are outside eontrol limits. Outside control limits due to possible matrix interferenee. Refer to Blank Spike.
- MSV85-BS/MS/MSD for Aerolein, Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

## Volatiles by GC By Method SW846 8015

| Matrix SO | Batch ID: GBH1310 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3417-1MS, MC3417-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Calibration check standard GBH1309-CC1043 utilized the same files as GBH1310-CC1043.

## Extractables by GC By Method SW846-8015

| Matrix SO | Batch ID: OP26262 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3492-6MS, MC3492-6MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN36105 |
|---|---|

- Sample(s) MC3458-1DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC3458).

New England ACCUTEST LABORATORIES

## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-41 (25-27)090911 | | |
| Lab Sample ID: | MC3458-1 | Date Sampled: | 09/09/11 |
| Matrix: | SO - Soil | Date Received: | 09/10/11 |
| Method: | SW846 8260B | Percent Solids: | 84.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V1967.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.65 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.2 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 26 | 18 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.2 | 2.1 | ug/kg | |
| 71-43-2 | Benzene | 2.1 | 0.52 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.2 | 0.20 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.2 | 1.1 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.1 | 0.22 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.1 | 0.49 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.1 | 0.70 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.2 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.2 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.2 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.2 | 0.68 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.2 | 1.0 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.1 | 0.23 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.1 | 0.098 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.2 | 0.27 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.2 | 5.2 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.1 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.2 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.2 | 0.15 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.2 | 1.2 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.2 | 5.2 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.1 | 0.68 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.1 | 0.20 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.1 | 0.16 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.1 | 0.15 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.1 | 0.15 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.1 | 0.36 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.1 | 0.16 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.1 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.1 | 0.33 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibratiou range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-41 (25-27)090911 | | |
| Lab Sample ID: | MC3458-1 | Date Sampled: | 09/09/11 |
| Matrix: | SO - Soil | Date Received: | 09/10/11 |
| Method: | SW846 8260B | Percent Solids: | 84.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.1 | 0.28 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.1 | 0.26 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.1 | 0.24 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.2 | 1.2 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.2 | 0.19 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.2 | 0.20 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.1 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.1 | 0.71 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 26 | 26 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.2 | 3.2 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.1 | 0.14 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.2 | 5.2 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.2 | 1.1 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.2 | 0.17 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.2 | 0.17 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.1 | 0.65 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.2 | 0.88 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.2 | 0.32 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.1 | 0.38 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.2 | 5.2 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.2 | 0.17 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.2 | 0.52 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.2 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.1 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.1 | 0.18 | ug/kg | |
| 108-88-3 | Toluene | 3.5 | 5.2 | 0.19 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.2 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.2 | 5.2 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.1 | 0.19 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.1 | 0.27 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.1 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.1 | 0.96 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.2 | 0.22 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.2 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.2 | 0.19 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.2 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.1 | 0.67 | ug/kg | |
| | m,p-Xylene | ND | 2.1 | 0.26 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.1 | 0.19 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.1 | 0.13 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-41 (25-27)090911 | | |
| Lab Sample ID: | MC3458-1 | Date Sampled: | 09/09/11 |
| Matrix: | SO - Soil | Date Received: | 09/10/11 |
| Method: | SW846 8260B | Percent Solids: | 84.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP-41 (25-27)090911 | | |
| **Lab Sample ID:** | MC3458-1 | **Date Sampled:** | 09/09/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/10/11 |
| **Method:** | SW846 8015 | **Percent Solids:** | 84.9 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH23840.D | 1 | 09/13/11 | AF | n/a | n/a | GBH1310 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.27 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 12 | 8.7 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 107% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-41 (25-27)090911 | | |
| Lab Sample ID: | MC3458-1 | Date Sampled: | 09/09/11 |
| Matrix: | SO - Soil | Date Received: | 09/10/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 84.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31025.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.1 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 19 | 14 | mg/kg | |
| | TPH (> C28-C40) | ND | 19 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 68% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.2

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-43 (10-12.5)090911 | | |
| Lab Sample ID: | MC3458-2 | Date Sampled: | 09/09/11 |
| Matrix: | SO - Soil | Date Received: | 09/10/11 |
| Method: | SW846 8260B | Percent Solids: | 93.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V1968.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.42 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~14.1~~ U | ~~6.0~~ 14.1 | 1.4 | ug/kg | U |
| 107-02-8 | Acrolein | ND | 30 | 20 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6.0 | 2.4 | ug/kg | |
| 71-43-2 | Benzene | 1.7 | 0.60 | 0.15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 6.0 | 0.23 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6.0 | 1.2 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.4 | 0.25 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.4 | 0.57 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.4 | 0.81 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 6.0 | 1.4 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 6.0 | 1.5 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 6.0 | 0.20 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 6.0 | 0.79 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 6.0 | 1.2 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.4 | 0.27 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.4 | 0.11 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6.0 | 0.31 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6.0 | 6.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.4 | 0.18 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6.0 | 0.26 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 6.0 | 0.17 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6.0 | 1.4 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6.0 | 6.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.4 | 0.79 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.4 | 0.23 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.4 | 0.18 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.4 | 0.17 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.4 | 0.17 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.4 | 0.41 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.4 | 0.18 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.4 | 0.17 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.4 | 0.38 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-43 (10-12.5)090911 | | |
| Lab Sample ID: | MC3458-2 | Date Sampled: | 09/09/11 |
| Matrix: | SO - Soil | Date Received: | 09/10/11 |
| Method: | SW846 8260B | Percent Solids: | 93.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.4 | 0.33 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.4 | 0.30 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.4 | 0.27 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6.0 | 1.4 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6.0 | 0.22 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6.0 | 0.23 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.4 | 1.2 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.4 | 0.83 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 30 | 30 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6.0 | 3.8 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.4 | 0.16 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 6.0 | 6.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6.0 | 1.3 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 6.0 | 0.19 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 6.0 | 0.20 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.4 | 0.75 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6.0 | 1.0 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6.0 | 0.37 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.4 | 0.44 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 6.0 | 6.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 1.8 | 6.0 | 0.19 | ug/kg | J |
| 100-42-5 | Styrene | ND | 6.0 | 0.60 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6.0 | 1.2 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.4 | 0.21 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.4 | 0.20 | ug/kg | |
| 108-88-3 | Toluene | 5.6 | 6.0 | 0.22 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6.0 | 1.3 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6.0 | 6.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.4 | 0.22 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.4 | 0.31 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.4 | 0.24 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.4 | 1.1 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6.0 | 0.25 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 8.6 | 6.0 | 0.19 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2.4 | 6.0 | 0.22 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 6.0 | 1.4 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.4 | 0.78 | ug/kg | |
| | m,p-Xylene | 6.7 | 2.4 | 0.30 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.4 | 0.22 | ug/kg | |
| 1330-20-7 | Xylene (total) | 6.7 | 2.4 | 0.15 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-43 (10-12.5)090911 | | |
| Lab Sample ID: | MC3458-2 | Date Sampled: | 09/09/11 |
| Matrix: | SO - Soil | Date Received: | 09/10/11 |
| Method: | SW846 8260B | Percent Solids: | 93.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 90% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-43 (10-12.5)090911 | | |
| Lab Sample ID: | MC3458-2 | Date Sampled: | 09/09/11 |
| Matrix: | SO - Soil | Date Received: | 09/10/11 |
| Method: | SW846 8015 | Percent Solids: | 93.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH23841.D | 1 | 09/13/11 | AF | n/a | n/a | GBH1310 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.62 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 12 | 8.6 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 87% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-43 (10-12.5)090911 | | |
| Lab Sample ID: | MC3458-2 | Date Sampled: | 09/09/11 |
| Matrix: | SO - Soil | Date Received: | 09/10/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 93.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31026.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.3 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | 12 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 68% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-43 (20-22.5)090911 | | |
| Lab Sample ID: | MC3458-3 | Date Sampled: | 09/09/11 |
| Matrix: | SO - Soil | Date Received: | 09/10/11 |
| Method: | SW846 8260B | Percent Solids: | 93.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V1969.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.89 g | 5.0 ml |
| Run #2 | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~7.2~~ U | ~~5.5~~ 7.2 | 1.3 | ug/kg | U |
| 107-02-8 | Acrolein | ND | 27 | 18 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.5 | 2.2 | ug/kg | |
| 71-43-2 | Benzene | 6.0 | 0.55 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.5 | 0.21 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.5 | 1.1 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.2 | 0.23 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.2 | 0.51 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.2 | 0.74 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.5 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.5 | 1.4 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.5 | 0.18 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.5 | 0.71 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.5 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.2 | 0.24 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.2 | 0.10 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.5 | 0.28 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.5 | 5.5 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.2 | 0.16 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.5 | 0.24 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.5 | 0.15 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.5 | 1.2 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.5 | 5.5 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.2 | 0.71 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.2 | 0.21 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.2 | 0.15 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.2 | 0.37 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.2 | 0.17 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.2 | 0.16 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.2 | 0.35 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-43 (20-22.5)090911 | | |
| Lab Sample ID: | MC3458-3 | Date Sampled: | 09/09/11 |
| Matrix: | SO - Soil | Date Received: | 09/10/11 |
| Method: | SW846 8260B | Percent Solids: | 93.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.2 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.2 | 0.28 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.2 | 0.25 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.5 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.5 | 0.20 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.5 | 0.21 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.2 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.2 | 0.75 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 27 | 27 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.5 | 3.4 | ug/kg | |
| 100-41-4 | Ethylbenzene | 4.7 | 2.2 | 0.14 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.5 | 5.5 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.5 | 1.1 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.5 | 0.17 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.5 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.2 | 0.68 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.5 | 0.92 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.5 | 0.33 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.2 | 0.39 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.5 | 5.5 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 2.2 | 5.5 | 0.18 | ug/kg | J |
| 100-42-5 | Styrene | ND | 5.5 | 0.55 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.5 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.2 | 0.19 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.2 | 0.18 | ug/kg | |
| 108-88-3 | Toluene | 13.2 | 5.5 | 0.20 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.5 | 1.2 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.5 | 5.5 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.2 | 0.28 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.2 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.2 | 1.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.5 | 0.23 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 10.8 | 5.5 | 0.17 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2.6 | 5.5 | 0.20 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 5.5 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.2 | 0.70 | ug/kg | |
| | m,p-Xylene | 17.4 | 2.2 | 0.27 | ug/kg | |
| 95-47-6 | o-Xylene | 2.4 | 2.2 | 0.20 | ug/kg | |
| 1330-20-7 | Xylene (total) | 19.8 | 2.2 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-43 (20-22.5)090911 | | |
| Lab Sample ID: | MC3458-3 | Date Sampled: | 09/09/11 |
| Matrix: | SO - Soil | Date Received: | 09/10/11 |
| Method: | SW846 8260B | Percent Solids: | 93.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP-43 (20-22.5)090911 | | |
| **Lab Sample ID:** | MC3458-3 | **Date Sampled:** | 09/09/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/10/11 |
| **Method:** | SW846 8015 | **Percent Solids:** | 93.7 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH23842.D | 1 | 09/13/11 | AF | n/a | n/a | GBH1310 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.82 g | 5.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.9 | 4.3 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 87% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-43 (20-22.5)090911 | | |
| Lab Sample ID: | MC3458-3 | Date Sampled: | 09/09/11 |
| Matrix: | SO - Soil | Date Received: | 09/10/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 93.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31027.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.3 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | 12 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 63% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-43 (30-31.5)090911 | | |
| Lab Sample ID: | MC3458-4 | Date Sampled: | 09/09/11 |
| Matrix: | SO - Soil | Date Received: | 09/10/11 |
| Method: | SW846 8260B | Percent Solids: | 95.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V1970.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.59 g | 5.0 ml |
| Run #2 | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~3.5~~ U | 5.7 | 1.3 | ug/kg | J U |
| 107-02-8 | Acrolein | ND | 28 | 19 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.7 | 2.3 | ug/kg | |
| 71-43-2 | Benzene | 1.9 | 0.57 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.7 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.7 | 1.2 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.3 | 0.24 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.3 | 0.54 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.3 | 0.77 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.7 | 1.4 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.7 | 1.4 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.7 | 0.19 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.7 | 0.74 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.7 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.3 | 0.26 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.3 | 0.11 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.7 | 0.30 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.7 | 5.7 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.3 | 0.17 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.7 | 0.25 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.7 | 0.16 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.7 | 1.3 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.7 | 5.7 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.3 | 0.74 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.3 | 0.22 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.3 | 0.17 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.3 | 0.16 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.3 | 0.16 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.3 | 0.39 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.3 | 0.17 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.3 | 0.17 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.3 | 0.36 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-43 (30-31.5)090911 | | |
| Lab Sample ID: | MC3458-4 | Date Sampled: | 09/09/11 |
| Matrix: | SO - Soil | Date Received: | 09/10/11 |
| Method: | SW846 8260B | Percent Solids: | 95.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.3 | 0.31 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.3 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.3 | 0.26 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.7 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.7 | 0.21 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.7 | 0.22 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.3 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.3 | 0.78 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 28 | 28 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.7 | 3.5 | ug/kg | |
| 100-41-4 | Ethylbenzene | 3.1 | 2.3 | 0.15 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.7 | 5.7 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.7 | 1.2 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.7 | 0.18 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.7 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.3 | 0.71 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.7 | 0.96 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.7 | 0.35 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.3 | 0.41 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.7 | 5.7 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 1.8 | 5.7 | 0.18 | ng/kg | J |
| 100-42-5 | Styrene | ND | 5.7 | 0.57 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.7 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.3 | 0.20 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.3 | 0.19 | ug/kg | |
| 108-88-3 | Toluene | 12.1 | 5.7 | 0.20 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.7 | 1.3 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.7 | 5.7 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.3 | 0.21 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.3 | 0.29 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.3 | 0.22 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.3 | 1.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.7 | 0.24 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 6.3 | 5.7 | 0.18 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.8 | 5.7 | 0.21 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 5.7 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.3 | 0.73 | ug/kg | |
| | m,p-Xylene | 7.1 | 2.3 | 0.29 | ug/kg | |
| 95-47-6 | o-Xylene | 1.6 | 2.3 | 0.21 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 8.7 | 2.3 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-43 (30-31.5)090911 | | |
| Lab Sample ID: | MC3458-4 | Date Sampled: | 09/09/11 |
| Matrix: | SO - Soil | Date Received: | 09/10/11 |
| Method: | SW846 8260B | Percent Solids: | 95.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 92% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-43 (30-31.5)090911 | | |
| Lab Sample ID: | MC3458-4 | Date Sampled: | 09/09/11 |
| Matrix: | SO - Soil | Date Received: | 09/10/11 |
| Method: | SW846 8015 | Percent Solids: | 95.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH23843.D | 1 | 09/13/11 | AF | n/a | n/a | GBH1310 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.58 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 12 | 8.4 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 99% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.4

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-43 (30-31.5)090911 | | |
| Lab Sample ID: | MC3458-4 | Date Sampled: | 09/09/11 |
| Matrix: | SO - Soil | Date Received: | 09/10/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 95.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31028.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.4 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | 12 | mg/kg | |
| | TPH (> C28-C40) | ND | 17 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 80% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB-090911 (TRIP BLANK) | | |
| Lab Sample ID: | MC3458-5 | Date Sampled: | 09/09/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/10/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M43484.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| **Client Sample ID:** | TB-090911 (TRIP BLANK) | | |
| **Lab Sample ID:** | MC3458-5 | **Date Sampled:** | 09/09/11 |
| **Matrix:** | AQ - Trip Blank Water | **Date Received:** | 09/10/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | n/a |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB-090911 (TRIP BLANK) | | |
| Lab Sample ID: | MC3458-5 | Date Sampled: | 09/09/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/10/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 88% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES



## Misc. Forms

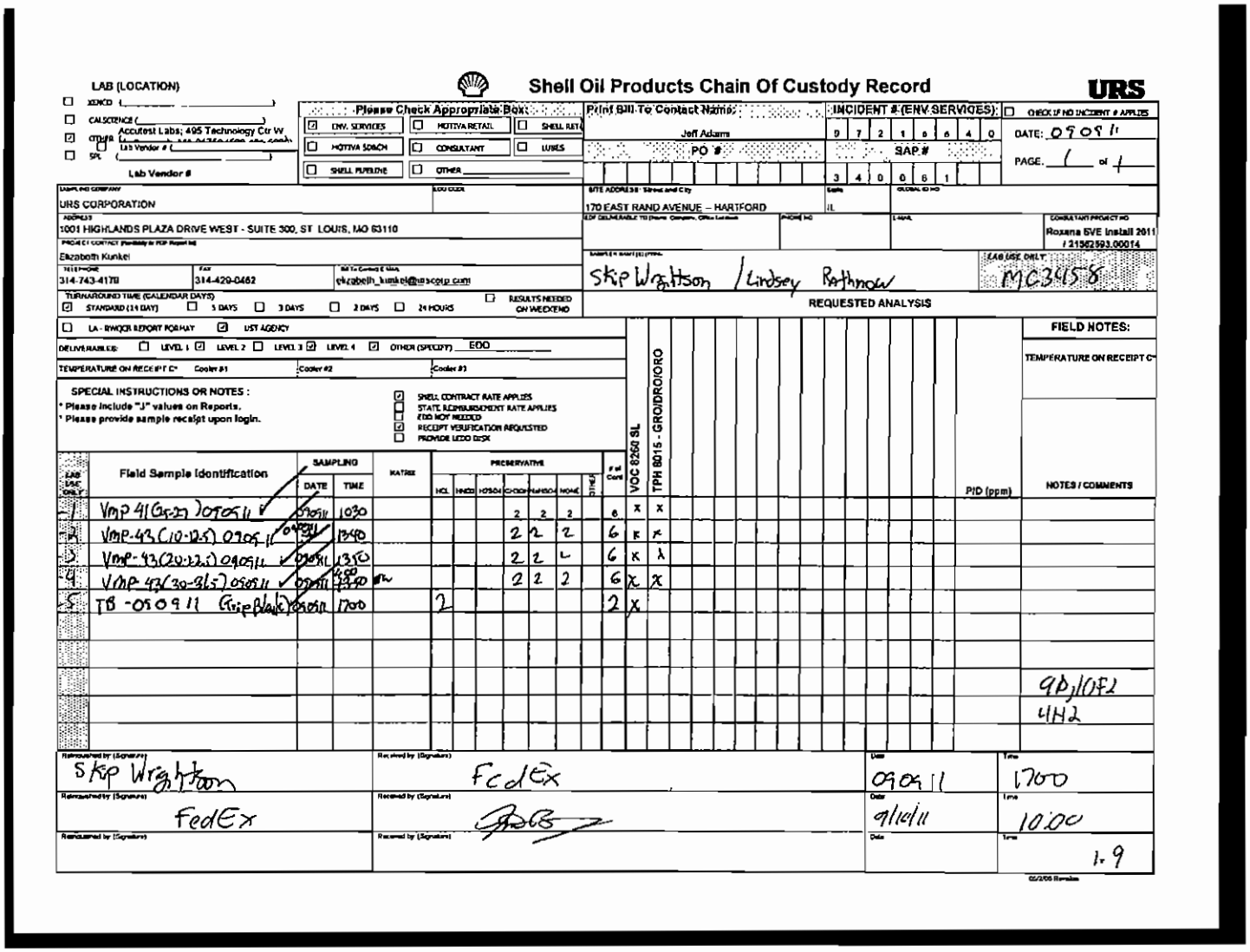
# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

# Shell Oil Products Chain Of Custody Record

URS



LAB (LOCATION)
- ☐ XENCO (_____)
- ☐ CALSCIENCE (_____)
- ☑ OTHER (Accutest Labs; 495 Technology Ctr W)
- ☐ Lab Vendor # (_____)
- ☐ SPL (_____)

Lab Vendor #

Please Check Appropriate Box:
- ☑ ENV. SERVICES
- ☐ MOTIVA RETAIL
- ☐ SHELL RETAIL
- ☐ MOTIVA SOBCH
- ☐ CONSULTANT
- ☐ LUBES
- ☐ SHELL PIPELINE
- ☐ OTHER _____

Print Bill To Contact Name: Jeff Adams

PO #

INCIDENT # (ENV SERVICES): 9 7 2 1 6 6 4 0

SAP #: 3 4 0 0 6 1

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 09 09 11

PAGE: 1 of 1

SAMPLING COMPANY: URS CORPORATION

LOG CODE:

SITE ADDRESS (Street and City): 170 EAST RAND AVENUE – HARTFORD

State: IL

GLOBAL ID NO:

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST LOUIS, MO 63110

EDF DELIVERABLE TO (Name, Company, Office Location):

PHONE NO:

E-MAIL:

CONSULTANT PROJECT NO: Roxana SVE Install 2011 / 21562593.00014

PROJECT CONTACT (Portability or PDF Report to): Elizabeth Kunkel

TELEPHONE: 314-743-4178

FAX: 314-429-0462

Bill To Contact E-MAIL: elizabeth_kunkel@urscorp.com

SAMPLER NAME(S) (PRINT): Skip Wrightson / Lindsey Rathnow

LAB USE ONLY: MC3458

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

REQUESTED ANALYSIS

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY

DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C°: Cooler #1 | Cooler #2 | Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
- * Please include "J" values on Reports.
- * Please provide sample receipt upon login.

- ☑ SHELL CONTRACT RATE APPLIES
- ☐ STATE REIMBURSEMENT RATE APPLIES
- ☐ EDD NOT NEEDED
- ☑ RECEIPT VERIFICATION REQUESTED
- ☐ PROVIDE LEDO DISK

FIELD NOTES:

TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE HCL | HNO3 | H2SO4 | CHOOH | NaHSO4 | NONE | OTHER | # of Cont | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | VMP 41(25-27) 090911 | 090911 | 1030 | | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -2 | VMP-43(10-12.5) 090911 | 090911 | 1340 | | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -3 | VMP-43(20-22.5) 090911 | 090911 | 1350 | | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -4 | VMP-43(30-31.5) 090911 | 090911 | 1400 | | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -5 | TB-090911 (Grip Blank) | 090911 | 1700 | | 2 | | | | | | | 2 | X | | | |
| | | | | | | | | | | | | | | | | 9D, 10F2 |
| | | | | | | | | | | | | | | | | 4H2 |

| Relinquished by (Signature) | Received by (Signature) | Date | Time |
|---|---|---|---|
| Skip Wrightson | FedEx | 090911 | 1700 |
| FedEx | [signature] | 9/10/11 | 10:00 |
| | | | 1.9 |

05/2/06 Revision

**MC3458: Chain of Custody**
**Page 1 of 2**

ACCUTEST LABORATORIES

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC3458 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 9/10/2011 Delivery Method: Client Service Action Required at Login: No

Project: 170 EAST RAND AVE HARTFORD IL No. Coolers: 1 Airbill #'s: N/A

| Cooler Security | Y | or | N | | Y | or | N |
|---|---|---|---|---|---|---|---|
| 1. Custody Seals Present: | ☑ | | ☐ | 3. COC Present: | ☑ | | ☐ |
| 2. Custody Seals Intact: | ☑ | | ☐ | 4. Smpl Dates/Time OK | ☑ | | ☐ |

| Cooler Temperature | Y | or | N |
|---|---|---|---|
| 1. Temp criteria achieved: | ☑ | | ☐ |
| 2. Cooler temp verification: | Infared gun | | |
| 3. Cooler media: | Ice (bag) | | |

| Quality Control Preservatio | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Trip Blank present / cooler: | ☑ | | ☐ | ☐ |
| 2. Trip Blank listed on COC: | ☑ | | ☐ | ☐ |
| 3. Samples preserved properly: | ☑ | | ☐ | |
| 4. VOCs headspace free: | ☑ | | ☐ | ☐ |

| Sample Integrity - Documentation | Y | or | N |
|---|---|---|---|
| 1. Sample labels present on bottles: | ☑ | | ☐ |
| 2. Container labeling complete: | ☑ | | ☐ |
| 3. Sample container label / COC agree: | ☑ | | ☐ |

| Sample Integrity - Condition | Y | or | N |
|---|---|---|---|
| 1. Sample recvd within HT: | ☑ | | ☐ |
| 2. All containers accounted for: | ☑ | | ☐ |
| 3. Condition of sample: | Intact | | |

| Sample Integrity - Instructions | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Analysis requested is clear: | ☑ | | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | | ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ | | ☐ | |
| 4. Compositing instructions clear: | ☐ | | ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ | | ☐ | ☑ |

Comments

Accutest Laboratories
V.508 481 6200
495 Technology Center West, Bldg One
F. 508.481.7753
Marlborough, MA
www.accutest.com

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4

**MC3458: Chain of Custody**
**Page 2 of 2**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3458

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3458-1 | Collected: 09-SEP-11 10:30 By: SWLR | | Received: 10-SEP-11 By: JB | | | |
| VMP-41 (25-27)090911 | | | | | | |
| MC3458-1 | SW846 8015 | 13-SEP-11 02:56 | AF | | | V8015GRO |
| MC3458-1 | SM21 2540 B MOD. | 14-SEP-11 | HS | | | %SOL |
| MC3458-1 | SW846 8260B | 21-SEP-11 16:43 | AMY | | | V8260SL |
| MC3458-1 | SW846-8015 | 21-SEP-11 19:40 | KD | 15-SEP-11 | MT | B8015DROORO |
| MC3458-2 | Collected: 09-SEP-11 13:40 By: SWLR | | Received: 10-SEP-11 By: JB | | | |
| VMP-43 (10-12.5)090911 | | | | | | |
| MC3458-2 | SW846 8015 | 13-SEP-11 03:35 | AF | | | V8015GRO |
| MC3458-2 | SM21 2540 B MOD. | 14-SEP-11 | HS | | | %SOL |
| MC3458-2 | SW846 8260B | 21-SEP-11 17:14 | AMY | | | V8260SL |
| MC3458-2 | SW846-8015 | 21-SEP-11 20:26 | KD | 15-SEP-11 | MT | B8015DROORO |
| MC3458-3 | Collected: 09-SEP-11 13:50 By: SWLR | | Received: 10-SEP-11 By: JB | | | |
| VMP-43 (20-22.5)090911 | | | | | | |
| MC3458-3 | SW846 8015 | 13-SEP-11 04:15 | AF | | | V8015GRO |
| MC3458-3 | SM21 2540 B MOD. | 14-SEP-11 | HS | | | %SOL |
| MC3458-3 | SW846 8260B | 21-SEP-11 17:44 | AMY | | | V8260SL |
| MC3458-3 | SW846-8015 | 21-SEP-11 21:12 | KD | 15-SEP-11 | MT | B8015DROORO |
| MC3458-4 | Collected: 09-SEP-11 16:00 By: SWLR | | Received: 10-SEP-11 By: JB | | | |
| VMP-43 (30-31.5)090911 | | | | | | |
| MC3458-4 | SW846 8015 | 13-SEP-11 04:55 | AF | | | V8015GRO |
| MC3458-4 | SM21 2540 B MOD. | 14-SEP-11 | HS | | | %SOL |
| MC3458-4 | SW846 8260B | 21-SEP-11 18:14 | AMY | | | V8260SL |
| MC3458-4 | SW846-8015 | 21-SEP-11 21:58 | KD | 15-SEP-11 | MT | B8015DROORO |
| MC3458-5 | Collected: 09-SEP-11 17:00 By: SWLR | | Received: 10-SEP-11 By: JB | | | |
| TB-090911 (TRIP BLANK) | | | | | | |
| MC3458-5 | SW846 8260B | 21-SEP-11 16:41 | TD | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/10/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3458-1.1 | Walk In Ref #9 | Hamid Siamak | 09/14/11 08:48 | Retrieve from Storage |
| MC3458-1.1 | Hamid Siamak | Walk In Ref #9 | 09/14/11 16:03 | Return to Storage |
| MC3458-1.1 | Walk In Ref #9 | Mahmoud Afzali | 09/15/11 11:13 | Retrieve from Storage |
| MC3458-1.1 | Mahmoud Afzali | Walk In Ref #9 | 09/17/11 08:17 | Return to Storage |
| MC3458-1.1 | Scott Parsick | | 10/27/11 13:22 | Disposed |
| MC3458-1.4 | VOC Ref #10 | Amy Min Yang | 09/21/11 10:59 | Retrieve from Storage |
| MC3458-1.4 | Amy Min Yang | GCMSV | 09/21/11 10:59 | Load on Instrument |
| MC3458-1.4 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3458-1.4 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3458-1.4 | Scott Parsick | | 10/27/11 13:22 | Disposed |
| MC3458-1.5 | VOC Ref #10 | Anthony Franciosa | 09/12/11 09:25 | Retrieve from Storage |
| MC3458-1.5 | Anthony Franciosa | GCBH | 09/12/11 09:25 | Load on Instrument |
| MC3458-1.5 | GCBH | Anthony Franciosa | 09/12/11 13:27 | Unload from Instrument |
| MC3458-1.5 | Anthony Franciosa | VOC Ref #10 | 09/12/11 13:27 | Return to Storage |
| MC3458-1.5 | Scott Parsick | | 10/27/11 13:22 | Disposed |
| MC3458-1.6 | VOC Ref #10 | Gary Krasinski | 09/12/11 13:32 | Retrieve from Storage |
| MC3458-1.6 | Gary Krasinski | VOC Ref #10 | 09/13/11 11:47 | Return to Storage |
| MC3458-1.6 | Scott Parsick | | 10/27/11 13:22 | Disposed |
| MC3458-2.1 | Walk In Ref #9 | Francisco Castellanos | 09/12/11 11:42 | Retrieve from Storage |
| MC3458-2.1 | Francisco Castellanos | Walk In Ref #9 | 09/12/11 20:33 | Return to Storage |
| MC3458-2.1 | Walk In Ref #9 | Hamid Siamak | 09/14/11 08:48 | Retrieve from Storage |
| MC3458-2.1 | Hamid Siamak | Walk In Ref #9 | 09/14/11 16:03 | Return to Storage |
| MC3458-2.1 | Walk In Ref #9 | Mahmoud Afzali | 09/15/11 11:13 | Retrieve from Storage |
| MC3458-2.1 | Mahmoud Afzali | Walk In Ref #9 | 09/17/11 08:17 | Return to Storage |
| MC3458-2.1 | Scott Parsick | | 10/27/11 13:22 | Disposed |
| MC3458-2.3 | VOC Ref #10 | Amy Min Yang | 09/21/11 10:59 | Retrieve from Storage |
| MC3458-2.3 | Amy Min Yang | GCMSV | 09/21/11 10:59 | Load on Instrument |
| MC3458-2.3 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3458-2.3 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3458-2.3 | Scott Parsick | | 10/27/11 13:22 | Disposed |
| MC3458-2.5 | VOC Ref #10 | Anthony Franciosa | 09/12/11 09:25 | Retrieve from Storage |
| MC3458-2.5 | Anthony Franciosa | GCBH | 09/12/11 09:25 | Load on Instrument |
| MC3458-2.5 | GCBH | Anthony Franciosa | 09/12/11 13:27 | Unload from Instrument |
| MC3458-2.5 | Anthony Franciosa | VOC Ref #10 | 09/12/11 13:27 | Return to Storage |
| MC3458-2.5 | VOC Ref #10 | Gary Krasinski | 09/12/11 14:06 | Retrieve from Storage |
| MC3458-2.5 | Gary Krasinski | VOC Ref #10 | 09/13/11 11:47 | Return to Storage |
| MC3458-2.5 | Scott Parsick | | 10/27/11 13:22 | Disposed |

# Accutest Internal Chain of Custody



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/10/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3458-2.6 | VOC Ref #10 | Gary Krasinski | 09/12/11 13:32 | Retrieve from Storage |
| MC3458-2.6 | Gary Krasinski | VOC Ref #10 | 09/13/11 11:42 | Return to Storage |
| MC3458-2.6 | Scott Parsick | | 10/27/11 13:22 | Disposed |
| MC3458-3.1 | Walk In Ref #9 | Hamid Siamak | 09/14/11 08:48 | Retrieve from Storage |
| MC3458-3.1 | Hamid Siamak | Walk In Ref #9 | 09/14/11 16:03 | Return to Storage |
| MC3458-3.1 | Walk In Ref #9 | Mahmoud Afzali | 09/15/11 11:13 | Retrieve from Storage |
| MC3458-3.1 | Mahmoud Afzali | Walk In Ref #9 | 09/17/11 08:17 | Return to Storage |
| MC3458-3.1 | Scott Parsick | | 10/27/11 13:22 | Disposed |
| MC3458-3.3 | VOC Ref #10 | Amy Min Yang | 09/21/11 10:59 | Retrieve from Storage |
| MC3458-3.3 | Amy Min Yang | GCMSV | 09/21/11 10:59 | Load on Instrument |
| MC3458-3.3 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3458-3.3 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3458-3.3 | Scott Parsick | | 10/27/11 13:22 | Disposed |
| MC3458-3.5 | VOC Ref #10 | Anthony Franciosa | 09/12/11 09:25 | Retrieve from Storage |
| MC3458-3.5 | Anthony Franciosa | GCBH | 09/12/11 09:25 | Load on Instrument |
| MC3458-3.5 | GCBH | Anthony Franciosa | 09/12/11 13:27 | Unload from Instrument |
| MC3458-3.5 | Anthony Franciosa | VOC Ref #10 | 09/12/11 13:27 | Return to Storage |
| MC3458-3.5 | Scott Parsick | | 10/27/11 13:22 | Disposed |
| MC3458-3.6 | VOC Ref #10 | Gary Krasinski | 09/12/11 13:32 | Retrieve from Storage |
| MC3458-3.6 | Gary Krasinski | VOC Ref #10 | 09/13/11 11:47 | Return to Storage |
| MC3458-3.6 | Scott Parsick | | 10/27/11 13:22 | Disposed |
| MC3458-4.1 | Walk In Ref #9 | Hamid Siamak | 09/14/11 08:48 | Retrieve from Storage |
| MC3458-4.1 | Hamid Siamak | Walk In Ref #9 | 09/14/11 16:03 | Return to Storage |
| MC3458-4.1 | Walk In Ref #9 | Mahmoud Afzali | 09/15/11 11:13 | Retrieve from Storage |
| MC3458-4.1 | Mahmoud Afzali | Walk In Ref #9 | 09/17/11 08:17 | Return to Storage |
| MC3458-4.1 | Scott Parsick | | 10/27/11 13:22 | Disposed |
| MC3458-4.3 | VOC Ref #10 | Amy Min Yang | 09/21/11 10:59 | Retrieve from Storage |
| MC3458-4.3 | Amy Min Yang | GCMSV | 09/21/11 10:59 | Load on Instrument |
| MC3458-4.3 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3458-4.3 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3458-4.3 | Scott Parsick | | 10/27/11 13:22 | Disposed |
| MC3458-4.5 | VOC Ref #10 | Anthony Franciosa | 09/12/11 09:25 | Retrieve from Storage |
| MC3458-4.5 | Anthony Franciosa | GCBH | 09/12/11 09:25 | Load on Instrument |
| MC3458-4.5 | GCBH | Anthony Franciosa | 09/12/11 13:27 | Unload from Instrument |
| MC3458-4.5 | Anthony Franciosa | VOC Ref #10 | 09/12/11 13:27 | Return to Storage |
| MC3458-4.5 | Scott Parsick | | 10/27/11 13:22 | Disposed |

# Accutest Internal Chain of Custody



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/10/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3458-4.6 | VOC Ref #10 | Gary Krasinski | 09/12/11 13:32 | Retrieve from Storage |
| MC3458-4.6 | Gary Krasinski | VOC Ref #10 | 09/13/11 11:47 | Return to Storage |
| MC3458-4.6 | Scott Parsick | | 10/27/11 13:22 | Disposed |
| MC3458-5.1 | VOC Ref #4 | Jugal Patel | 09/19/11 16:48 | Retrieve from Storage |
| MC3458-5.1 | Jugal Patel | VOC Ref #4 | 09/21/11 10:24 | Return to Storage |
| MC3458-5.1 | Scott Parsick | | 10/27/11 13:22 | Disposed |

New England ACCUTEST LABORATORIES



## GC/MS Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike aud Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV85-MB | V1952.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3458-1, MC3458-2, MC3458-3, MC3458-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV85-MB | V1952.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3458-1, MC3458-2, MC3458-3, MC3458-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropaue | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary

Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV85-MB | V1952.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3458-1, MC3458-2, MC3458-3, MC3458-4

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

# Method Blank Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1398-MB | M43476.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3458-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |

# Method Blank Summary

Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1398-MB | M43476.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3458-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

# Method Blank Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1398-MB | M43476.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3458-5

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | 70-130% |

# Blank Spike Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV85-BS | V1951.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3458-1, MC3458-2, MC3458-3, MC3458-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 79.2 | 158* [a] | 70-130 |
| 107-02-8 | Acrolein | 250 | 793 | 317* [b] | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 323 | 646* [b] | 70-130 |
| 71-43-2 | Benzene | 50 | 56.0 | 112 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 47.9 | 96 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 51.0 | 102 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 52.0 | 104 | 70-130 |
| 75-25-2 | Bromoform | 50 | 43.9 | 88 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 51.8 | 104 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 53.1 | 106 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 58.3 | 117 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 52.5 | 105 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 50.6 | 101 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 48.8 | 98 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 49.7 | 99 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 54.6 | 109 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 60.3 | 121 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 49.0 | 98 | 10-160 |
| 67-66-3 | Chloroform | 50 | 54.1 | 108 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 50.4 | 101 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 49.4 | 99 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 50.4 | 101 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 43.2 | 86 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 48.5 | 97 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 48.1 | 96 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 53.4 | 107 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 50.1 | 100 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 49.0 | 98 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 45.3 | 91 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 57.9 | 116 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 52.8 | 106 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 55.2 | 110 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 53.2 | 106 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 53.6 | 107 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 53.7 | 107 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 48.2 | 96 | 70-130 |

# Blank Spike Summary

Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV85-BS | V1951.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3458-1, MC3458-2, MC3458-3, MC3458-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 57.0 | 114 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 52.8 | 106 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 54.2 | 108 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 56.2 | 112 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 273 | 109 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 51.9 | 104 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 55.1 | 110 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 52.0 | 104 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 65.2 | 130 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 58.5 | 117 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 54.9 | 110 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 52.4 | 105 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 56.7 | 113 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 52.4 | 105 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 59.0 | 118 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 52.4 | 105 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 52.1 | 104 | 70-130 |
| 100-42-5 | Styrene | 50 | 54.5 | 109 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 51.4 | 103 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 49.0 | 98 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 50.3 | 101 | 70-130 |
| 108-88-3 | Toluene | 50 | 52.3 | 105 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 53.1 | 106 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 55.5 | 111 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 52.1 | 104 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 50.4 | 101 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 51.2 | 102 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 48.5 | 97 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 46.3 | 93 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 50.6 | 101 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 50.7 | 101 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 38.6 | 77 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 45.5 | 91 | 70-130 |
| | m,p-Xylene | 100 | 111 | 111 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 54.4 | 109 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 165 | 110 | 70-130 |

# Blank Spike Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV85-BS | V1951.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3458-1, MC3458-2, MC3458-3, MC3458-4

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 95% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1398-BS | M43473.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3458-5

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 61.9 | 124 | 70-130 |
| 107-02-8 | Acrolein | 250 | 195 | 78 | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 226 | 452* [a] | 70-130 |
| 71-43-2 | Benzene | 50 | 51.4 | 103 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 55.8 | 112 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 54.5 | 109 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 57.6 | 115 | 70-130 |
| 75-25-2 | Bromoform | 50 | 52.6 | 105 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 47.5 | 95 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 61.7 | 123 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 60.6 | 121 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 59.6 | 119 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 58.3 | 117 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 46.6 | 93 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 60.7 | 121 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 54.7 | 109 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 47.1 | 94 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 41.1 | 82 | 70-130 |
| 67-66-3 | Chloroform | 50 | 54.5 | 109 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 38.0 | 76 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 54.2 | 108 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 55.9 | 112 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 52.8 | 106 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 60.8 | 122 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 56.0 | 112 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 56.2 | 112 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 55.8 | 112 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 55.4 | 111 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 44.4 | 89 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 52.6 | 105 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 56.2 | 112 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 53.8 | 108 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 52.8 | 106 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 53.9 | 108 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 54.5 | 109 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 53.7 | 107 | 70-130 |

# Blank Spike Summary

Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, 1L

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1398-BS | M43473.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3458-5

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 62.6 | 125 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 57.3 | 115 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 52.0 | 104 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 56.4 | 113 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 205 | 82 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 50.3 | 101 | 77-137 |
| 100-41-4 | Ethylbenzene | 50 | 56.4 | 113 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 75.8 | 152* [a] | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 57.7 | 115 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 64.9 | 130 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 61.1 | 122 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 49.8 | 100 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 50.6 | 101 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 55.6 | 111 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 50.8 | 102 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 54.3 | 109 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 56.5 | 113 | 70-130 |
| 100-42-5 | Styrene | 50 | 53.9 | 108 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 59.1 | 118 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 50.4 | 101 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 62.3 | 125 | 70-130 |
| 108-88-3 | Toluene | 50 | 55.9 | 112 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 58.1 | 116 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 61.3 | 123 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 58.3 | 117 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 56.2 | 112 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 56.5 | 113 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 54.0 | 108 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 50.0 | 100 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 54.0 | 108 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 54.3 | 109 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 34.0 | 68* [b] | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 39.3 | 79 | 70-130 |
| | m,p-Xylene | 100 | 117 | 117 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 58.3 | 117 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 176 | 117 | 70-130 |

# Blank Spike Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1398-BS | M43473.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3458-5

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 91% | 70-130% |
| 2037-26-5 | Toluene-D8 | 93% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits. Blank Spike meets program technical requirements.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3617-17MS | V1961.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| MC3617-17MSD | V1962.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| MC3617-17 | V1960.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3458-1, MC3458-2, MC3458-3, MC3458-4

| CAS No. | Compound | MC3617-17 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 34.0 | | 56.5 | 97.0 | 112 | 97.8 | 122 | 1 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 282 | 721 | 255* [a] | 684 | 261* [a] | 5 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 56.5 | 286 | 506* [a] | 273 | 521* [a] | 5 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 56.5 | 54.5 | 96 | 52.6 | 100 | 4 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 56.5 | 45.5 | 81 | 45.2 | 86 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 56.5 | 47.2 | 84 | 44.4 | 85 | 6 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 56.5 | 50.8 | 90 | 48.8 | 93 | 4 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 56.5 | 45.2 | 80 | 43.0 | 82 | 5 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 56.5 | 51.2 | 91 | 48.8 | 93 | 5 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 56.5 | 87.6 | 155* [b] | 83.3 | 159* [b] | 5 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 56.5 | 48.2 | 85 | 50.4 | 96 | 4 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 56.5 | 54.5 | 96 | 59.6 | 114 | 9 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 56.5 | 59.8 | 106 | 66.6 | 127 | 11 | 70-130/30 |
| 75-15-0 | Carbon disulfide | 0.94 | | 56.5 | 37.9 | 65* [b] | 37.0 | 69* [b] | 2 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 56.5 | 52.8 | 93 | 51.9 | 99 | 2 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 56.5 | 44.4 | 79 | 42.3 | 81 | 5 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 56.5 | 58.2 | 103 | 55.3 | 105 | 5 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 56.5 | ND | 0* [b] | ND | 0* [b] | nc | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 56.5 | 54.9 | 97 | 52.9 | 101 | 4 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 56.5 | 51.8 | 92 | 48.4 | 92 | 7 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 56.5 | 54.6 | 97 | 58.2 | 111 | 6 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 56.5 | 48.7 | 86 | 48.7 | 93 | 0 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 56.5 | 62.5 | 111 | 63.1 | 120 | 1 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 56.5 | 50.9 | 90 | 49.8 | 95 | 2 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 56.5 | 45.0 | 80 | 41.4 | 79 | 8 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 56.5 | 44.5 | 79 | 43.8 | 84 | 2 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 56.5 | 40.9 | 72 | 39.4 | 75 | 4 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 56.5 | 37.8 | 67* [b] | 34.6 | 66* [b] | 9 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 56.5 | 43.0 | 76 | 41.7 | 80 | 3 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 56.5 | 61.8 | 109 | 59.3 | 113 | 4 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 56.5 | 52.9 | 94 | 49.4 | 94 | 7 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 56.5 | 50.7 | 90 | 48.6 | 93 | 4 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | 1.1 | | 56.5 | 46.3 | 80 | 44.2 | 82 | 5 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 56.5 | 43.4 | 77 | 40.8 | 78 | 6 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 56.5 | 56.0 | 99 | 53.7 | 102 | 4 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 56.5 | 52.1 | 92 | 50.2 | 96 | 4 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3617-17MS | V1961.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| MC3617-17MSD | V1962.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| MC3617-17 | V1960.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3458-1, MC3458-2, MC3458-3, MC3458-4

| CAS No. | Compound | MC3617-17 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 56.5 | 57.5 | 102 | 56.0 | 107 | 3 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 56.5 | 43.9 | 78 | 41.2 | 79 | 6 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 56.5 | 39.9 | 71 | 36.0 | 69* b | 10 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 56.5 | 35.0 | 62* b | 29.4 | 56* b | 17 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 282 | 492 | 174* b | 456 | 174* b | 8 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 56.5 | 63.9 | 113 | 59.7 | 114 | 7 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 56.5 | 49.6 | 88 | 48.9 | 93 | 1 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 56.5 | 35.4 | 63* b | 36.9 | 70 | 4 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 56.5 | 90.7 | 161* b | 86.2 | 164* b | 5 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 56.5 | 72.9 | 129 | 81.1 | 155* b | 11 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 56.5 | 55.1 | 98 | 59.2 | 113 | 7 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 56.5 | 65.3 | 116 | 63.9 | 122 | 2 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 56.5 | 98.9 | 175* b | 91.9 | 175* b | 7 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 56.5 | 44.3 | 78 | 40.7 | 78 | 8 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 56.5 | 55.0 | 97 | 53.4 | 102 | 3 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 56.5 | 25.7 | 45* b | 21.7 | 41* b | 17 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 56.5 | 56.2 | 99 | 59.3 | 113 | 5 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 56.5 | 39.7 | 70 | 37.3 | 71 | 6 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 56.5 | 54.9 | 97 | 57.0 | 109 | 4 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 56.5 | 83.4 | 148* b | 89.4 | 170* b | 7 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | 1.1 | | 56.5 | 47.9 | 83 | 47.5 | 88 | 1 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 56.5 | 47.3 | 84 | 45.0 | 86 | 5 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 56.5 | 24.6 | 44* b | 21.0 | 40* b | 16 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 56.5 | 26.0 | 46* b | 22.8 | 43* b | 13 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 56.5 | 55.7 | 99 | 54.7 | 104 | 2 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 56.5 | 55.0 | 97 | 52.4 | 100 | 5 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 56.5 | 41.6 | 74 | 39.1 | 75 | 6 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 56.5 | 51.3 | 91 | 48.3 | 92 | 6 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 56.5 | 69.6 | 123 | 72.0 | 137* b | 3 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 56.5 | 54.8 | 97 | 58.0 | 111 | 6 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 56.5 | 56.9 | 101 | 62.0 | 118 | 9 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 56.5 | 44.8 | 79 | 37.0 | 71 | 19 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 56.5 | 42.0 | 74 | 40.4 | 77 | 4 | 70-130/30 |
| | m,p-Xylene | ND | | 113 | 98.6 | 87 | 97.5 | 93 | 1 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 56.5 | 50.9 | 90 | 51.7 | 99 | 2 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 169 | 149 | 88 | 149 | 95 | 0 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3617-17MS | V1961.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| MC3617-17MSD | V1962.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |
| MC3617-17 | V1960.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV85 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3458-1, MC3458-2, MC3458-3, MC3458-4

| CAS No. | Surrogate Recoveries | MS | MSD | MC3617-17 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | 100% | 102% | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | 95% | 90% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 116% | 123% | 134%* [c] | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3557-7MS | M43480.D | 10 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| MC3557-7MSD | M43481.D | 10 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| MC3557-7 | M43482.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| MC3557-7 | M43479.D | 10 | 09/21/11 | TD | n/a | n/a | MSM1398 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3458-5

| CAS No. | Compound | MC3557-7 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 500 | 442 | 88 | 440 | 88 | 0 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 2500 | 4700 | 188* [a] | 4780 | 191* [a] | 2 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 500 | 2360 | 472* [a] | 2260 | 452* [a] | 4 | 70-130/30 |
| 71-43-2 | Benzene | 0.86 | | 500 | 520 | 104 | 501 | 100 | 4 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 500 | 567 | 113 | 568 | 114 | 0 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 500 | 540 | 108 | 534 | 107 | 1 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 500 | 601 | 120 | 573 | 115 | 5 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 500 | 529 | 106 | 525 | 105 | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 500 | 458 | 92 | 448 | 90 | 2 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 500 | 584 | 117 | 566 | 113 | 3 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 500 | 623 | 125 | 598 | 120 | 4 | 70-130/30 |
| 135-98-8 | sec-Butylhenzene | 4.6 | | 500 | 620 | 123 | 580 | 115 | 7 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 500 | 604 | 121 | 568 | 114 | 6 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 500 | 462 | 92 | 454 | 91 | 2 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 500 | 621 | 124 | 587 | 117 | 6 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 500 | 558 | 112 | 545 | 109 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 500 | 466 | 93 | 453 | 91 | 3 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 500 | 52.3 | 10* [b] | ND | 0* [b] | 200* [c] | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 500 | 548 | 110 | 531 | 106 | 3 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 500 | 373 | 75 | 364 | 73 | 2 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 500 | 557 | 111 | 539 | 108 | 3 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 500 | 568 | 114 | 560 | 112 | 1 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 500 | 562 | 112 | 526 | 105 | 7 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 500 | 618 | 124 | 599 | 120 | 3 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 500 | 572 | 114 | 568 | 114 | 1 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 500 | 584 | 117 | 570 | 114 | 2 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 500 | 568 | 114 | 555 | 111 | 2 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 500 | 565 | 113 | 549 | 110 | 3 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 500 | 418 | 84 | 385 | 77 | 8 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 500 | 522 | 104 | 509 | 102 | 3 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 500 | 574 | 115 | 544 | 109 | 5 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 500 | 528 | 106 | 524 | 105 | 1 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 500 | 528 | 106 | 522 | 104 | 1 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 500 | 539 | 108 | 535 | 107 | 1 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 500 | 549 | 110 | 544 | 109 | 1 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 500 | 542 | 108 | 533 | 107 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3557-7MS | M43480.D | 10 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| MC3557-7MSD | M43481.D | 10 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| MC3557-7 | M43482.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| MC3557-7 | M43479.D | 10 | 09/21/11 | TD | n/a | n/a | MSM1398 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3458-5

| CAS No. | Compound | MC3557-7 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 500 | 610 | 122 | 578 | 116 | 5 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 500 | 579 | 116 | 553 | 111 | 5 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 500 | 519 | 104 | 512 | 102 | 1 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 500 | 557 | 111 | 560 | 112 | 1 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 2500 | 2120 | 85 | 2200 | 88 | 4 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 500 | 508 | 102 | 519 | 104 | 2 | 72-139/30 |
| 100-41-4 | Ethylbenzene | 117 | | 500 | 669 | 110 | 644 | 105 | 4 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 500 | 765 | 153* [a] | 721 | 144* [a] | 6 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 500 | 516 | 103 | 529 | 106 | 2 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | 10.5 | | 500 | 680 | 134* [b] | 644 | 127 | 5 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | 3.2 | | 500 | 625 | 124 | 595 | 118 | 5 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2.7 | | 500 | 507 | 101 | 504 | 100 | 1 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 500 | 515 | 103 | 506 | 101 | 2 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 500 | 564 | 113 | 545 | 109 | 3 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 500 | 506 | 101 | 510 | 102 | 1 | 70-130/30 |
| 91-20-3 | Naphthalene | 67.3 | | 500 | 632 | 113 | 602 | 107 | 5 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 27.9 | | 500 | 601 | 115 | 580 | 110 | 4 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 500 | 540 | 108 | 541 | 108 | 0 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 500 | 609 | 122 | 573 | 115 | 6 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 500 | 523 | 105 | 512 | 102 | 2 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 500 | 631 | 126 | 602 | 120 | 5 | 70-130/30 |
| 108-88-3 | Toluene | 1.6 | | 500 | 572 | 114 | 557 | 111 | 3 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 500 | 605 | 121 | 570 | 114 | 6 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 500 | 633 | 127 | 598 | 120 | 6 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 500 | 587 | 117 | 560 | 112 | 5 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 500 | 565 | 113 | 568 | 114 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 500 | 578 | 116 | 548 | 110 | 5 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 500 | 535 | 107 | 509 | 102 | 5 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 500 | 512 | 102 | 502 | 100 | 2 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 375 [d] | | 500 | 975 | 120 | 930 | 111 | 5 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 17.9 | | 500 | 577 | 112 | 549 | 106 | 5 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 500 | 346 | 69* [b] | 354 | 71 | 2 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 500 | 389 | 78 | 366 | 73 | 6 | 70-130/30 |
| | m,p-Xylene | 262 | | 1000 | 1390 | 113 | 1350 | 109 | 3 | 70-130/30 |
| 95-47-6 | o-Xylene | 27.5 | | 500 | 624 | 119 | 594 | 113 | 5 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 290 | | 1500 | 2010 | 115 | 1950 | 111 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3557-7MS | M43480.D | 10 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| MC3557-7MSD | M43481.D | 10 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| MC3557-7 | M43482.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| MC3557-7 | M43479.D | 10 | 09/21/11 | TD | n/a | n/a | MSM1398 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3458-5

| CAS No. | Surrogate Recoveries | MS | MSD | MC3557-7 | MC3557-7 | Limits |
|---|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 90% | 89% | 89% | 92% | 70-130% |
| 2037-26-5 | Toluene-D8 | 94% | 94% | 96% | 95% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | 97% | 97% | 94% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(c) High RPD due to possible matrix interference and/or sample non-homogeneity.
(d) Result is from Run #2.

# Volatile Internal Standard Area Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1398-CC1370 | Injection Date: | 09/21/11 |
| Lab File ID: | M43472.D | Injection Time: | 10:30 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 104667 | 9.19 | 158648 | 10.07 | 78940 | 13.34 | 100533 | 15.90 | 28304 | 6.74 |
| Upper Limit [a] | 209334 | 9.69 | 317296 | 10.57 | 157880 | 13.84 | 201066 | 16.40 | 56608 | 7.24 |
| Lower Limit [b] | 52334 | 8.69 | 79324 | 9.57 | 39470 | 12.84 | 50267 | 15.40 | 14152 | 6.24 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1393-BS2 | 115718 | 9.19 | 175505 | 10.07 | 84995 | 13.34 | 103850 | 15.90 | 35691 | 6.74 |
| MSM1398-BS | 115718 | 9.19 | 175505 | 10.07 | 84995 | 13.34 | 103850 | 15.90 | 35691 | 6.74 |
| MSM1393-BSD2 | 117397 | 9.19 | 177098 | 10.07 | 86609 | 13.33 | 106062 | 15.90 | 35636 | 6.75 |
| MSM1393-MB2 | 103428 | 9.19 | 154589 | 10.07 | 75072 | 13.34 | 86683 | 15.90 | 31945 | 6.74 |
| MSM1398-MB | 103428 | 9.19 | 154589 | 10.07 | 75072 | 13.34 | 86683 | 15.90 | 31945 | 6.74 |
| ZZZZZZ | 106692 | 9.19 | 161650 | 10.07 | 76373 | 13.34 | 91522 | 15.90 | 35426 | 6.74 |
| ZZZZZZ | 103321 | 9.19 | 156121 | 10.07 | 73766 | 13.34 | 90358 | 15.90 | 32965 | 6.74 |
| MC3557-7 | 104887 | 9.19 | 153361 | 10.07 | 72257 | 13.34 | 89736 | 15.90 | 33367 | 6.74 |
| MC3557-7MS | 113801 | 9.19 | 170358 | 10.07 | 82052 | 13.34 | 100698 | 15.90 | 35152 | 6.74 |
| MC3557-7MSD | 121159 | 9.19 | 182463 | 10.07 | 89544 | 13.33 | 108692 | 15.90 | 36189 | 6.75 |
| MC3557-7 | 119967 | 9.19 | 179945 | 10.07 | 84482 | 13.34 | 110034 | 15.90 | 37927 | 6.74 |
| MC3458-5 | 128966 | 9.19 | 191334 | 10.07 | 89593 | 13.34 | 110759 | 15.90 | 38318 | 6.74 |
| ZZZZZZ | 128332 | 9.19 | 189957 | 10.07 | 88510 | 13.34 | 110737 | 15.90 | 39646 | 6.74 |
| ZZZZZZ | 123995 | 9.19 | 184845 | 10.07 | 83166 | 13.34 | 101979 | 15.90 | 38055 | 6.74 |
| ZZZZZZ | 116932 | 9.19 | 172141 | 10.07 | 81450 | 13.34 | 97631 | 15.90 | 35254 | 6.74 |
| ZZZZZZ | 111796 | 9.19 | 165136 | 10.07 | 77179 | 13.34 | 93210 | 15.90 | 35444 | 6.73 |
| ZZZZZZ | 113808 | 9.19 | 168439 | 10.07 | 77410 | 13.34 | 92142 | 15.90 | 35571 | 6.74 |
| ZZZZZZ | 108211 | 9.19 | 162614 | 10.07 | 74720 | 13.34 | 90181 | 15.90 | 33689 | 6.74 |
| ZZZZZZ | 104721 | 9.19 | 154829 | 10.07 | 74733 | 13.34 | 89662 | 15.90 | 34162 | 6.74 |
| ZZZZZZ | 107186 | 9.19 | 157610 | 10.07 | 71316 | 13.34 | 88425 | 15.90 | 32156 | 6.74 |
| ZZZZZZ | 104920 | 9.19 | 154642 | 10.07 | 75107 | 13.34 | 89088 | 15.90 | 32428 | 6.74 |
| ZZZZZZ | 103853 | 9.19 | 155215 | 10.07 | 71374 | 13.34 | 85731 | 15.90 | 30864 | 6.74 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV85-CC67 | Injection Date: | 09/21/11 |
| Lab File ID: | V1950.D | Injection Time: | 08:07 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 397958 | 6.51 | 595647 | 7.70 | 329521 | 11.06 | 341213 | 13.30 | I21049 | 3.48 |
| Upper Limit [a] | 795916 | 7.01 | 1191294 | 8.20 | 659042 | 11.56 | 682426 | 13.80 | 242098 | 3.98 |
| Lower Limit [b] | 198979 | 6.01 | 297824 | 7.20 | 164761 | 10.56 | 170607 | 12.80 | 60525 | 2.98 |

| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| MSV85-BS | 410567 | 6.52 | 622583 | 7.71 | 347899 | 11.07 | 356483 | 13.30 | 116707 | 3.49 |
| MSV85-MB | 368939 | 6.51 | 568634 | 7.70 | 316528 | 11.06 | 324563 | 13.30 | 120778 | 3.48 |
| ZZZZZZ | 353500 | 6.52 | 546672 | 7.71 | 303298 | 11.06 | 309222 | 13.30 | 104006 | 3.49 |
| ZZZZZZ | 360160 | 6.51 | 557761 | 7.71 | 309868 | 11.06 | 320685 | 13.30 | 101378 | 3.49 |
| ZZZZZZ | 341074 | 6.51 | 532521 | 7.70 | 292421 | 11.06 | 288089 | 13.30 | 117555 | 3.49 |
| ZZZZZZ | 368867 | 6.52 | 569977 | 7.71 | 321050 | 11.07 | 333789 | 13.30 | 121617 | 3.49 |
| ZZZZZZ | 329317 | 6.51 | 511857 | 7.70 | 281890 | 11.06 | 264193 | 13.30 | I02181 | 3.48 |
| ZZZZZZ | 320859 | 6.51 | 504376 | 7.70 | 280408 | 11.06 | 280834 | 13.30 | 115761 | 3.49 |
| ZZZZZZ | 326932 | 6.52 | 525081 | 7.71 | 301075 | 11.07 | 313155 | 13.30 | 153355 | 3.49 |
| MC3617-17 | 304046 | 6.51 | 470396 | 7.71 | 200905 | 11.07 | 109740[c] | 13.30 | 158485 | 3.49 |
| MC3617-17MS | 337866 | 6.51 | 513316 | 7.70 | 264849 | 11.07 | 205372 | 13.30 | 164775 | 3.48 |
| MC3617-17MSD | 340103 | 6.51 | 514449 | 7.71 | 253134 | 11.07 | 177610 | 13.30 | 158178 | 3.48 |
| ZZZZZZ | 341779 | 6.52 | 526972 | 7.71 | 302527 | 11.07 | 299091 | 13.30 | 140540 | 3.48 |
| ZZZZZZ | 74894[c] | 6.51 | 120924[c] | 7.71 | 71581[c] | 11.07 | 70105[c] | 13.30 | 42576[c] | 3.46 |
| ZZZZZZ | 327720 | 6.52 | 525643 | 7.71 | 300318 | 11.07 | 301706 | 13.30 | 154561 | 3.49 |
| MC3458-1 | 299273 | 6.51 | 472344 | 7.70 | 264278 | 11.07 | 260083 | 13.30 | 92300 | 3.48 |
| MC3458-2 | 346342 | 6.52 | 541991 | 7.71 | 309503 | 11.07 | 319149 | 13.30 | 147603 | 3.50 |
| MC3458-3 | 347782 | 6.52 | 544578 | 7.71 | 311445 | 11.07 | 320988 | 13.30 | 150552 | 3.49 |
| MC3458-4 | 349694 | 6.52 | 544165 | 7.71 | 313558 | 11.07 | 323277 | 13.30 | 158756 | 3.49 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Volatile Surrogate Recovery Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3458-5 | M43484.D | 88.0 | 96.0 | 96.0 |
| MC3557-7MS | M43480.D | 90.0 | 94.0 | 96.0 |
| MC3557-7MSD | M43481.D | 89.0 | 94.0 | 97.0 |
| MSM1398-BS | M43473.D | 91.0 | 93.0 | 96.0 |
| MSM1398-MB | M43476.D | 94.0 | 96.0 | 99.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3458-1 | V1967.D | 94.0 | 96.0 | 98.0 |
| MC3458-2 | V1968.D | 90.0 | 97.0 | 97.0 |
| MC3458-3 | V1969.D | 94.0 | 98.0 | 98.0 |
| MC3458-4 | V1970.D | 92.0 | 96.0 | 97.0 |
| MC3617-17MS | V1961.D | 100.0 | 95.0 | 116.0 |
| MC3617-17MSD | V1962.D | 100.0 | 95.0 | 123.0 |
| MSV85-BS | V1951.D | 95.0 | 97.0 | 97.0 |
| MSV85-MB | V1952.D | 94.0 | 95.0 | 95.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

New England ACCUTEST LABORATORIES

# GC Volatiles

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## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1310-MB | BH23814A.DI | | 09/12/11 | AF | n/a | n/a | GBH1310 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3458-1, MC3458-2, MC3458-3, MC3458-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 3.6 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 86% | 36-148% |

# Blank Spike Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1310-BSP | BH23815A.D1 | | 09/12/11 | AF | n/a | n/a | GBH1310 |



The QC reported here applies to the following samples: Method: SW846 8015

MC3458-1, MC3458-2, MC3458-3, MC3458-4

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 19.1 | 96 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 91% | 36-148% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3417-1MS | BH23824.D | 1 | 09/12/11 | AF | n/a | n/a | GBH1310 |
| MC3417-1MSD | BH23825.D | 1 | 09/12/11 | AF | n/a | n/a | GBH1310 |
| MC3417-1 | BH23823.D | 1 | 09/12/11 | AF | n/a | n/a | GBH1310 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3458-1, MC3458-2, MC3458-3, MC3458-4

| CAS No. | Compound | MC3417-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 46.4 | 43.2 | 93 | 42.3 | 91 | 2 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3417-1 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 95% | 98% | 97% | 36-148% |

# Volatile Surrogate Recovery Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Method: SW846 8015 | Matrix: SO |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3458-1 | BH23840.D | 107.0 |
| MC3458-2 | BH2384I.D | 87.0 |
| MC3458-3 | BH23842.D | 87.0 |
| MC3458-4 | BH23843.D | 99.0 |
| GBH1310-BSP | BH23815A.D | 91.0 |
| GBH1310-MB | BH23814A.D | 86.0 |
| MC3417-1MS | BH23824.D | 95.0 |
| MC3417-1MSD | BH23825.D | 98.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1309-CC1043 | Injection Date: | 09/12/11 |
| Lab File ID: | BH23813.D | Injection Time: | 08:49 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1309-MB | BH23814.D | 09/12/11 | 09:28 | 32.40 |
| GBH1310-MB | BH23814A.D | 09/12/11 | 09:28 | 32.40 |
| GBH1309-BSP | BH23815.D | 09/12/11 | 10:08 | 32.40 |
| GBH1310-BSP | BH23815A.D | 09/12/11 | 10:08 | 32.40 |
| MC3391-4 | BH23816.D | 09/12/11 | 10:49 | 32.39 |
| MC3391-4MS | BH23817.D | 09/12/11 | 11:30 | 32.40 |
| MC3391-4MSD | BH23818.D | 09/12/11 | 12:17 | 32.40 |
| ZZZZZZ | BH23819.D | 09/12/11 | 12:57 | 32.39 |
| ZZZZZZ | BH23820.D | 09/12/11 | 13:37 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1310-CC1043 | Injection Date: | 09/12/11 |
| Lab File ID: | BH23813A.D | Injection Time: | 08:49 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1309-MB | BH23814.D | 09/12/11 | 09:28 | 32.40 |
| GBH1310-MB | BH23814A.D | 09/12/11 | 09:28 | 32.40 |
| GBH1309-BSP | BH23815.D | 09/12/11 | 10:08 | 32.40 |
| GBH1310-BSP | BH23815A.D | 09/12/11 | 10:08 | 32.40 |
| MC3391-4 | BH23816.D | 09/12/11 | 10:49 | 32.39 |
| MC3391-4MS | BH23817.D | 09/12/11 | 11:30 | 32.40 |
| MC3391-4MSD | BH23818.D | 09/12/11 | 12:17 | 32.40 |
| ZZZZZZ | BH23819.D | 09/12/11 | 12:57 | 32.39 |
| ZZZZZZ | BH23820.D | 09/12/11 | 13:37 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1309-CC1043 | Injection Date: | 09/12/11 |
| Lab File ID: | BH23822.D | Injection Time: | 14:57 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3417-1 | BH23823.D | 09/12/11 | 15:38 | 32.40 |
| MC3417-1MS | BH23824.D | 09/12/11 | 16:18 | 32.40 |
| MC3417-1MSD | BH23825.D | 09/12/11 | 16:58 | 32.40 |
| ZZZZZZ | BH23826.D | 09/12/11 | 17:38 | 32.40 |
| ZZZZZZ | BH23827.D | 09/12/11 | 18:18 | 32.40 |
| ZZZZZZ | BH23830.D | 09/12/11 | 20:18 | 32.40 |
| ZZZZZZ | BH23831.D | 09/12/11 | 20:59 | 32.40 |
| ZZZZZZ | BH23832.D | 09/12/11 | 21:39 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1310-CC1043 | Injection Date: | 09/12/11 |
| Lab File ID: | BH23822A.D | Injection Time: | 14:57 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3417-1 | BH23823.D | 09/12/11 | 15:38 | 32.40 |
| MC3417-1MS | BH23824.D | 09/12/11 | 16:18 | 32.40 |
| MC3417-1MSD | BH23825.D | 09/12/11 | 16:58 | 32.40 |
| ZZZZZZ | BH23826.D | 09/12/11 | 17:38 | 32.40 |
| ZZZZZZ | BH23827.D | 09/12/11 | 18:18 | 32.40 |
| ZZZZZZ | BH23830.D | 09/12/11 | 20:18 | 32.40 |
| ZZZZZZ | BH23831.D | 09/12/11 | 20:59 | 32.40 |
| ZZZZZZ | BH23832.D | 09/12/11 | 21:39 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1310-CC1043 | Injection Date: | 09/12/11 |
| Lab File ID: | BH23833A.D | Injection Time: | 22:19 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BH23834.D | 09/12/11 | 22:58 | 32.40 |
| ZZZZZZ | BH23835.D | 09/12/11 | 23:38 | 32.40 |
| ZZZZZZ | BH23836.D | 09/13/11 | 00:17 | 32.40 |
| ZZZZZZ | BH23837.D | 09/13/11 | 00:57 | 32.40 |
| ZZZZZZ | BH23838.D | 09/13/11 | 01:36 | 32.40 |
| ZZZZZZ | BH23839.D | 09/13/11 | 02:16 | 32.40 |
| MC3458-1 | BH23840.D | 09/13/11 | 02:56 | 32.40 |
| MC3458-2 | BH23841.D | 09/13/11 | 03:35 | 32.40 |
| MC3458-3 | BH23842.D | 09/13/11 | 04:15 | 32.40 |
| MC3458-4 | BH23843.D | 09/13/11 | 04:55 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1309-CC1043 | Injection Date: | 09/12/11 |
| Lab File ID: | BH23833.D | Injection Time: | 22:19 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BH23834.D | 09/12/11 | 22:58 | 32.40 |
| ZZZZZZ | BH23835.D | 09/12/11 | 23:38 | 32.40 |
| ZZZZZZ | BH23836.D | 09/13/11 | 00:17 | 32.40 |
| ZZZZZZ | BH23837.D | 09/13/11 | 00:57 | 32.40 |
| ZZZZZZ | BH23838.D | 09/13/11 | 01:36 | 32.40 |
| ZZZZZZ | BH23839.D | 09/13/11 | 02:16 | 32.40 |
| MC3458-1 | BH23840.D | 09/13/11 | 02:56 | 32.40 |
| MC3458-2 | BH23841.D | 09/13/11 | 03:35 | 32.40 |
| MC3458-3 | BH23842.D | 09/13/11 | 04:15 | 32.40 |
| MC3458-4 | BH23843.D | 09/13/11 | 04:55 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

New England ACCUTEST LABORATORIES

## GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26262-MB | BG31013.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3458-1, MC3458-2, MC3458-3, MC3458-4



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 16 | 11 | mg/kg | |
| | TPH (> C28-C40) | ND | 16 | 11 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 90% | 24-147% |

# Blank Spike Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26262-BS | BG31014.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3458-1, MC3458-2, MC3458-3, MC3458-4

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 160 | 143 | 89 | 63-139 |
| | TPH (>C28-C40) | 160 | 103 | 64 | 46-103 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 100% | 24-147% |

7.2.1

7

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26262-MS | BG31015.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| OP26262-MSD | BG31016.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| MC3492-6 | BG31017.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3458-1, MC3458-2, MC3458-3, MC3458-4



| CAS No. | Compound | MC3492-6 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 184 | 128 | 69 | 119 | 65 | 7 | 8-154/127 |
| | TPH (>C28-C40) | ND | | 184 | 91.1 | 49 | 83.9 | 46 | 8 | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3492-6 | Limits |
|---|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 74% | 71% | 67% | 24-147% |

# Semivolatile Surrogate Recovery Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3458-1 | BG31025.D | 68.0 |
| MC3458-2 | BG31026.D | 68.0 |
| MC3458-3 | BG31027.D | 63.0 |
| MC3458-4 | BG31028.D | 80.0 |
| OP26262-BS | BG31014.D | 100.0 |
| OP26262-MB | BG31013.D | 90.0 |
| OP26262-MS | BG31015.D | 74.0 |
| OP26262-MSD | BG31016.D | 71.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 1-Chlorooctadecane | 24-147% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, 1L

| | | | |
|---|---|---|---|
| Check Std: | GBG1104-CC1103 | Injection Date: | 09/21/11 |
| Lab File ID: | BG31012.D | Injection Time: | 09:40 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.97 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26262-MB | BG31013.D | 09/21/11 | 10:30 | 14.99 |
| OP26262-BS | BG31014.D | 09/21/11 | 11:16 | 14.99 |
| OP26262-MS | BG31015.D | 09/21/11 | 12:02 | 14.99 |
| OP26262-MSD | BG31016.D | 09/21/11 | 12:48 | 14.99 |
| MC3492-6 | BG31017.D | 09/21/11 | 13:34 | 14.99 |
| ZZZZZZ | BG31018.D | 09/21/11 | 14:20 | 14.99 |
| ZZZZZZ | BG31019.D | 09/21/11 | 15:05 | 14.99 |
| ZZZZZZ | BG31020.D | 09/21/11 | 15:51 | 14.98 |
| ZZZZZZ | BG31021.D | 09/21/11 | 16:37 | 14.99 |
| ZZZZZZ | BG31022.D | 09/21/11 | 17:23 | 14.99 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1104-CC1103 | Injection Date: | 09/21/11 |
| Lab File ID: | BG31023.D | Injection Time: | 18:09 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.97 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31024.D | 09/21/11 | 18:54 | 14.99 |
| MC3458-1 | BG31025.D | 09/21/11 | 19:40 | 14.99 |
| MC3458-2 | BG31026.D | 09/21/11 | 20:26 | 14.99 |
| MC3458-3 | BG31027.D | 09/21/11 | 21:12 | 14.99 |
| MC3458-4 | BG31028.D | 09/21/11 | 21:58 | 14.99 |
| ZZZZZZ | BG31029.D | 09/21/11 | 22:44 | 14.99 |
| ZZZZZZ | BG31030.D | 09/21/11 | 23:30 | 14.99 |
| ZZZZZZ | BG31031.D | 09/22/11 | 00:16 | 14.99 |
| ZZZZZZ | BG31032.D | 09/22/11 | 01:02 | 14.99 |
| ZZZZZZ | BG31033.D | 09/22/11 | 01:48 | 14.99 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

New England ACCUTEST LABORATORIES

General Chemistry

# QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC3458
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

**Sample:** MC3458-1 **Analyzed:** 14-SEP-11 by HS **Method:** SM21 2540 B MOD.
**ClientID:** VMP-41 (25-27)090911

| | | |
|---|---|---|
| Wet Weight (Total) | 35.371 | g |
| Tare Weight | 27.958 | g |
| Dry Weight (Total) | 34.25 | g |
| Solids, Percent | 84.9 | % |

**Sample:** MC3458-2 **Analyzed:** 14-SEP-11 by HS **Method:** SM21 2540 B MOD.
**ClientID:** VMP-43 (10-12.5)090911

| | | |
|---|---|---|
| Wet Weight (Total) | 34.242 | g |
| Tare Weight | 27.639 | g |
| Dry Weight (Total) | 33.835 | g |
| Solids, Percent | 93.8 | % |

**Sample:** MC3458-3 **Analyzed:** 14-SEP-11 by HS **Method:** SM21 2540 B MOD.
**ClientID:** VMP-43 (20-22.5)090911

| | | |
|---|---|---|
| Wet Weight (Total) | 28.602 | g |
| Tare Weight | 21.963 | g |
| Dry Weight (Total) | 28.184 | g |
| Solids, Percent | 93.7 | % |

**Sample:** MC3458-4 **Analyzed:** 14-SEP-11 by HS **Method:** SM21 2540 B MOD.
**ClientID:** VMP-43 (30-31.5)090911

| | | |
|---|---|---|
| Wet Weight (Total) | 26.109 | g |
| Tare Weight | 18.757 | g |
| Dry Weight (Total) | 25.786 | g |
| Solids, Percent | 95.6 | % |

8.1

8

# SVE Install 2011 Data Review

**Laboratory SDG: MC3492**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 12/19/2011**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| VMP-38 (9-10) 091211 | VMP-42 (30-31) 091211 EB |
| VMP-39 (9-10) 091211 | TB-91211 #1 |
| VMP-42 (20-22.5) 091211 | VMP-42 (10-12.5) 091211 |
| VMP-42 (30-31.5) 091211 | VMP-42 (20-22.5) 091211 Dup |
| TB-91211 #2 | |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

*Yes,* the laboratory case narrative indicated VOC LCS/LCSD recoveries were outside evaluation criteria. VOC MS/MSD recoveries were outside of evaluation criteria in sample VMP-42 (10-12.5) 091211. Although not indicated in the laboratory case narrative, acetone was detected in the method blank. Professional judgment was used to qualify acetone in several samples. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 1.7°C and 1.4°C, which was outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required. Additionally, the Dup designation was left off the field duplicate of sample VMP-42 (20-22.5) 091211 on the laboratory report; results were reported using the proper COC-designated sample ID.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

Yes

| Blank ID | Parameter | Analyte | Concentration |
|---|---|---|---|
| MSV92-MB | VOCs | Acetone | 12.7 ug/L |

Analytical data that were reported non-detect or at concentrations greater than five times (5X) the associated blank concentration (10X for common laboratory contaminants) did not require qualification. No qualification of data was required.

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSE2259-BS | VOCs | Acrolein | **238** | NA | 70-130 |
| MSE2259-BS | VOCs | Acrylonitrile | **440** | NA | 70-130 |
| MSE2259-BS | VOCs | Dichlorodifluoromethane | **50** | NA | 70-130 |
| MSE2259-BS | VOCs | Vinyl acetate | **67** | NA | 70-130 |
| MSE2259-BS | VOCs | Vinyl chloride | **69** | NA | 70-130 |
| MSM1398-BS | VOCs | Acrylonitrile | **452** | NA | 70-130 |
| MSM1398-BS | VOCs | Hexachlorobutadiene | **152** | NA | 70-130 |
| MSM1398-BS | VOCs | Vinyl Acetate | **68** | NA | 70-130 |
| MSV86-BS | VOCs | Acrolein | **352** | NA | 70-130 |
| MSV86-BS | VOCs | Acrylonitrile | **644** | NA | 70-130 |
| MSV91-BS/BSD | VOCs | Acrolein | **297/315** | 6 | 70-130/25 |
| MSV91-BS/BSD | VOCs | Acrylonitrile | **586/636** | 8 | 70-130/25 |
| MSV91-BS/BSD | VOCs | 2-Hexanone | **140/168** | 18 | 70-130/25 |
| MSV92-BS/BSD | VOCs | Acrolein | **256/239** | 7 | 70-130/25 |
| MSV92-BS/BSD | VOCs | Acrylonitrile | **592/594** | 0 | 70-130/25 |
| MSV92-BS/BSD | VOCs | 2-Butanone | **151/152** | 0 | 70-130/25 |
| MSV92-BS/BSD | VOCs | 1,4-Dioxane | **150/140** | 7 | 70-130/25 |
| MSV92-BS/BSD | VOCs | 2-Hexanone | **164/165** | 0 | 70-130/25 |
| MSV92-BS/BSD | VOCs | 4-Methyl-2-pentanone (MIBK) | **166/166** | 0 | 70-130/25 |
| MSV92-BS/BSD | VOCs | Naphthalene | **135/136** | 1 | 70-130/25 |

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS MSM1398-BS was associated with trip blank samples TB91211 #1 and TB91211 #2, and equipment blank sample VMP-42 (30-31) 091211 EB. Trip blank samples and equipment blank samples are quality control samples and are not qualified.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| VMP-38 (9-10) 091211 | VOCs | Dichlorodifluoromethane | **UJ** |
| VMP-38 (9-10) 091211 | VOCs | Vinyl acetate | **UJ** |
| VMP-38 (9-10) 091211 | VOCs | Vinyl chloride | **UJ** |
| VMP-39 (9-10) 091211 | VOCs | Dichlorodifluoromethane | **UJ** |
| VMP-39 (9-10) 091211 | VOCs | Vinyl acetate | **UJ** |
| VMP-39 (9-10) 091211 | VOCs | Vinyl chloride | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, sample VMP-42 (10-12.5) 091211 was spiked and analyzed for VOCs and TPH-GRO.

*Were MS/MSD recoveries within evaluation criteria?*

No

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/ RPD Criteria |
|---|---|---|---|---|---|
| VMP-42 (10-12.5) 091211 | VOCs | Acrolein | **311/285** | 10 | 70-130/30 |
| VMP-42 (10-12.5) 091211 | VOCs | Acrylonitrile | **645/615** | 6 | 70-130/30 |
| VMP-42 (10-12.5) 091211 | VOCs | 2-Butanone (MEK) | **161/151** | 7 | 70-130/30 |
| VMP-42 (10-12.5) 091211 | VOCs | 2-Chloroethyl vinyl ether | **0/0** | NA | 10-160/30 |
| VMP-42 (10-12.5) 091211 | VOCs | 1,2-Dibromo-3-chloropropane | **141/134** | 6 | 70-130/30 |
| VMP-42 (10-12.5) 091211 | VOCs | 1,4-Dioxane | **144/152** | 4 | 70-130/30 |
| VMP-42 (10-12.5) 091211 | VOCs | 2-Hexanone | **181/167** | 9 | 70-130/30 |
| VMP-42 (10-12.5) 091211 | VOCs | 4-Methyl-2-pentanone (MIBK) | **184/169** | 10 | 70-130/30 |
| VMP-42 (10-12.5) 091211 | VOCs | 1,1,2,2-Tetrachloroethane | **132**/125 | 7 | 70-130/30 |
| VMP-42 (10-12.5) 091211 | VOCs | 1,2,3-Trichloropropane | **139**/124 | 12 | 70-130/30 |

USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone and LCS recoveries were within evaluation criteria with the exception of compounds listed and qualified as

appropriate in Section 5.0 of this data review. No further qualification of the data was required.

**8.0 Internal Standard (IS) Recoveries**

*Were internal standard area recoveries within evaluation criteria?*

No, the initial run results for sample VMP-42 (10-12.5) 091211 were outside criteria; however, lab data used the second confirmation run results, which were inside criteria. Therefore no qualification of the data was required.

**9.0 Laboratory Duplicate Results**

*Were laboratory duplicate samples collected as part of this SDG?*

No

**10.0 Field Duplicate Results**

*Were field duplicate samples collected as part of this SDG?*

Yes

| Field ID | Field Duplicate ID |
|---|---|
| VMP-42 (20-22.5) 091211 | VMP-42 (20-22.5) 091211 Dup |

*Were field duplicates within evaluation criteria?*

Yes

**11.0 Sample Dilutions**

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

**12.0 Additional Qualifications**

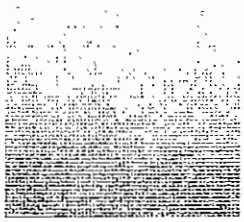
*Were additional qualifications applied?*

Yes, professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations greater than two times (2X) the reporting limit (RL), since acetone is not representative of site conditions. Additionally, USEPA Method 5035A states that acidification of certain soils with sodium bisulfate may produce a false positive acetone artifact of 100-200 ppb, or more. Acetone reported at concentrations less than 200 ppb (ug/kg) were qualified.

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| VMP-42 (20-22.5) 091211 | Acetone | 29.9 ug/kg | **U** | Professional Judgment |
| VMP-42 (10-12.5) 091211 | Acetone | 14.5 ug/kg | **U** | Professional Judgment |
| VMP-42 (30-31.5)-091211 | Acetone | 52.5 ug/kg | **U** | Professional Judgment |
| VMP-42 (20-22.5) 091211 Dup | Acetone | 53.0 ug/kg | **U** | Professional Judgment |

New England ACCUTEST LABORATORIES

11/23/11





## Technical Report for

Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC3492

Sampling Date: 09/12/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **145**

Reviewed on 12/19/2011

Reza Tand
Lab Director

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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# Sample Summary

Shell Oil

Job No: MC3492

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|
| MC3492-1 | 09/12/11 | 13:32 SW | 09/13/11 | SO | Soil | VMP38 (9-10)091211 |
| MC3492-2 | 09/12/11 | 15:30 SW | 09/13/11 | AQ | Equipment Blank | VMP42 (30-31)091211 EB |
| MC3492-3 | 09/12/11 | 14:56 SW | 09/13/11 | SO | Soil | VMP39 (9-10)091211 |
| MC3492-4 | 09/12/11 | 17:00 SW | 09/13/11 | AQ | Trip Blank Water | TB91211 #1 |
| MC3492-5 | 09/12/11 | 12:00 SW | 09/13/11 | SO | Soil | VMP42 (20-22.5)91211 |
| MC3492-6 | 09/12/11 | 11:45 SW | 09/13/11 | SO | Soil | VMP42 (10-12.5)91211 |
| MC3492-6D | 09/12/11 | 11:45 SW | 09/13/11 | SO | Soil Dup/MSD | VMP42 (10-12.5)91211 |
| MC3492-6S | 09/12/11 | 11:45 SW | 09/13/11 | SO | Soil Matrix Spike | VMP42 (10-12.5)91211 |
| MC3492-7 | 09/12/11 | 12:15 SW | 09/13/11 | SO | Soil | VMP42 (30-31.5)91211 |
| MC3492-8 | 09/12/11 | 12:00 SW | 09/13/11 | SO | Soil | VMP42 (20-22.5)91211 |
| MC3492-9 | 09/12/11 | 17:25 SW | 09/13/11 | AQ | Trip Blank Water | TB91211 #2 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC3492 |
| **Site:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Ra | **Report Date** | 9/28/2011 1:14:03 PM |

6 Sample(s) and 2 Trip Blank(s) were collected on 09/12/2011 and were received at Accutest on 09/13/2011 properly preserved, at 1.4 Deg. C and intaet. These Samples reeeived an Accutest job number of MC3492. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method speeified calibrations and quality control performance eriteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSM1398

- All samples were analyzed within the reeommended method holding time.
- Sample(s) MC3557-7MS, MC3557-7MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MSM1398-BS for Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.
- RPD(s) for MC3557-7MSD for 2-Chloroethyl vinyl ether are outside control limits. High RPD due to possible matrix interference and/or sample non-homogencity.
- MSM1398-BS for Acrylonitrile, Hexachlorobutadiene: Outside control limits. Associated samples are non-detect for this compound.
- MC3557-7MS/MSD for Acrolein, Acrylonitrile, Hexachlorobutadiene: Outside control limits. Associated samples are non-detect for this compound.
- MC3557-7MS for Vinyl Acetate, Isopropylbenzene: Outside control limits due to possible matrix interference. Refer to Blank Spike.

**Matrix** SO **Batch ID:** MSE2259

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3419-20MS, MC3419-20MSD were used as the QC samples indicated.
- MSE2259-BS for Dichlorodifluoromethane, Vinyl Acetate, Vinyl chloride are outside control limits. Blank Spike meets program technical requirements.
- MC3419-20MS/MSD for Acrolein, Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.
- MC3419-20MS for 1,2,3-Trichlorobenzene, 2-Butanone (MEK): Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MC3419-20MSD for 2-Chloroethyl vinyl ether, 1,2,3-Trichlorobenzene, Naphthalene are outside control limits. High RPD due to possible matrix interference and/or sample non-homogeneity.
- MC3419-20MSD for Vinyl Acetate: Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MC3419-20MS/MSD for Hexachlorobutadiene, Dichlorodifluoromethane are outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSE2259-BS for Acrolein, Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

**Matrix** SO **Batch ID:** MSE2261

- MC3492-6: Confirmation run.

**Matrix** SO **Batch ID:** MSV86

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3492-6MS, MC3492-6MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Volatiles by GCMS By Method SW846 8260B

| Matrix SO | Batch ID: MSV86 |
|---|---|

- MC3492-6MS/MSD for 1,2-Dibromo-3-chloropropane, 1,4-Dioxane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MC3492-6MS/MSD for Acrolein, Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.
- MC3492-6MS for 1,1,2,2-Tetrachloroethane, 1,2,3-Trichloropropane: Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSV86-BS for Acrylonitrile, Acrolein: Outside control limits. Associated samples are non-detect for this compound.
- MC3492-6 for internal standards are outside control limits due to possible matrix interference. Confirmed by reanalysis.

| Matrix SO | Batch ID: MSV91 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3869-7MS, MC3869-7MSD were used as the QC samples indicated.
- MC3869-7MS/MSD for 2-Hexanone, Acrolein, Acrylonitrile are outside control limits. Associated samples are non-detect for this compound.
- MSV91-BS/BSD for Acrolein, 2-Hexanone, Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.
- MC3492-8 for internal standards are outside control limits due to possible matrix interference. Confirmed by reanalysis.

| Matrix SO | Batch ID: MSV92 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3748-24MS, MC3748-24MSD were used as the QC samples indicated.
- Sample(s) MC3492-7, MC3492-8 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank.
- MSV92-BS/BSD for Naphthalene are outside control limits. Blank Spike meets program technical requirements.
- MC3748-24MS for Bromoform, 1,2-Dibromo-3-chloropropane, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Hexachlorobutadiene are outside control limits due to possible matrix interference. Refer to Blank Spike.
- MC3748-24MSD for n-Butylbenzene, sec-Butylbenzene, Chloroethane, Isopropylbenzene, p-Isopropyltoluene, n-Propylbenzene are outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MC3748-24MSD for Ethyl methacrylate are outside control limits. High RPD due to possible matrix interference and/or sample non-homogeneity.
- MSV92-BS for 1,4-Dioxane, Acrylonitrile, Acrolein, 4-Methyl-2-pentanone (MIBK), 2-Butanone (MEK), 2-Hexanone: Outside control limits. Associated samples are non-detect for this compound.
- MC3748-24MS/MSD for Acrylonitrile, Acrolein: Outside control limits. Associated samples are non-detect for this compound.
- MC3748-24MS/MSD for Acetone, Naphthalene, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene: Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Continuing calibration check standard MSV92-CC67 utilized the same file as MSV90-CC65.

## Volatiles by GC By Method SW846 8015

| Matrix AQ | Batch ID: GBH1317 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3471-1MS, MC3471-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

| Matrix SO | Batch ID: GBH1318 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3492-6MS, MC3492-6MSD were used as the QC samples indicated.

## Extractables by GC By Method SW846-8015

| Matrix AQ | Batch ID: OP26295 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3696-1MS, MC3696-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

| Matrix SO | Batch ID: OP26262 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3492-6MS, MC3492-6MSD were used as the QC samples indicated.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN36125 |
|---|---|

- Sample(s) MC3492-6DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC3492).

New England ACCUTEST LABORATORIES

## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP38 (9-10)091211 | | |
| Lab Sample ID: | MC3492-1 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | 76.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | E55598.D | 1 | 09/15/11 | GK | n/a | n/a | MSE2259 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 10.2 g | 10.0 ml | 25.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 1600 | 370 | ug/kg | |
| 107-02-8 | Acrolein | ND | 8000 | 5400 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 1600 | 640 | ug/kg | |
| 71-43-2 | Benzene | ND | 160 | 40 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 1600 | 61 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 1600 | 330 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 640 | 67 | ug/kg | |
| 75-25-2 | Bromoform | ND | 640 | 150 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 640 | 220 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 1600 | 380 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 3630 | 1600 | 410 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 811 | 1600 | 53 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 1600 | 210 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 1600 | 310 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 640 | 72 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 640 | 30 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 1600 | 84 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 1600 | 1600 | ug/kg | |
| 67-66-3 | Chloroform | ND | 640 | 48 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 1600 | 69 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 1600 | 45 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 1600 | 360 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1600 | 1600 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 640 | 210 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 640 | 61 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 640 | 48 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 640 | 46 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 640 | 45 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 640 | 110 | ug/kg | UJ |
| 75-34-3 | 1,1-Dichloroethane | ND | 640 | 49 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 640 | 47 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 640 | 100 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compouud

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP38 (9-10)091211 | | |
| Lab Sample ID: | MC3492-1 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | 76.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 640 | 87 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 640 | 81 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 640 | 73 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 1600 | 370 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 1600 | 59 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 1600 | 62 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 640 | 320 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 640 | 220 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 8000 | 8000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 1600 | 1000 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 640 | 42 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 1600 | 1600 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 1600 | 340 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 510 | 1600 | 51 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | ND | 1600 | 52 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 640 | 200 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 1600 | 270 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 1600 | 98 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 640 | 120 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 1600 | 1600 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 2350 | 1600 | 52 | ug/kg | |
| 100-42-5 | Styrene | ND | 1600 | 160 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1600 | 320 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 640 | 57 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 640 | 54 | ug/kg | |
| 108-88-3 | Toluene | ND | 1600 | 58 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1600 | 350 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1600 | 1600 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 640 | 59 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 640 | 82 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 640 | 63 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 640 | 300 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1600 | 67 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 1600 | 51 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 1600 | 58 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 1600 | 380 | ug/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 640 | 210 | ug/kg | UJ |
| | m,p-Xylene | ND | 640 | 81 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 640 | 59 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 640 | 40 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP38 (9-10)091211 | | |
| **Lab Sample ID:** | MC3492-1 | **Date Sampled:** | 09/12/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/13/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | 76.0 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 113% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 108% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP38 (9-10)091211 | | |
| Lab Sample ID: | MC3492-1 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8015 | Percent Solids: | 76.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24000.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1318 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.14 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 404 | 14 | 10 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 100% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP38 (9-10)091211 | | |
| **Lab Sample ID:** | MC3492-1 | **Date Sampled:** | 09/12/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/13/11 |
| **Method:** | SW846-8015 SW846 3546 | **Percent Solids:** | 76.0 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31037.D | 1 | 09/22/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.6 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 113 | 21 | 15 | mg/kg | |
| | TPH ( > C28-C40) | ND | 21 | 15 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 70% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP42 (30-31)091211 EB | | |
| Lab Sample ID: | MC3492-2 | Date Sampled: | 09/12/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M43489.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP42 (30-31)091211 EB | | |
| Lab Sample ID: | MC3492-2 | Date Sampled: | 09/12/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte fonnd in associated method blank
N = Indicates presumptive evidence of a componnd

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP42 (30-31)091211 EB | | |
| Lab Sample ID: | MC3492-2 | Date Sampled: | 09/12/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 91% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 94% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP42 (30-31)091211 EB | | |
| Lab Sample ID: | MC3492-2 | Date Sampled: | 09/12/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/13/11 |
| Method: | SW846 8015 | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH23993.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1317 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 0.10 | 0.070 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# I | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 97% | | 60-126% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.2

| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP42 (30-31)091211 EB | | |
| **Lab Sample ID:** | MC3492-2 | **Date Sampled:** | 09/12/11 |
| **Matrix:** | AQ - Equipment Blank | **Date Received:** | 09/13/11 |
| **Method:** | SW846-8015 SW846 3510C | **Percent Solids:** | n/a |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31079.D | 1 | 09/24/11 | KD | 09/19/11 | OP26295 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 940 ml | I.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 0.21 | mg/l | |
| | TPH ( > C28-C40) | ND | 0.21 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 54% | | 33-150% |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (9-10)091211 | | |
| Lab Sample ID: | MC3492-3 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | 85.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, 1L | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | E55599.D | 1 | 09/15/11 | GK | n/a | n/a | MSE2259 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.65 g | 10.0 ml | 25.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 2200 | 520 | ug/kg | |
| 107-02-8 | Acrolein | ND | 11000 | 7500 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 2200 | 890 | ug/kg | |
| 71-43-2 | Benzene | 3200 | 220 | 56 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 2200 | 85 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 2200 | 460 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 890 | 94 | ug/kg | |
| 75-25-2 | Bromoform | ND | 890 | 210 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 890 | 300 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 2200 | 530 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 4130 | 2200 | 560 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 1720 | 2200 | 74 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 2200 | 290 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 2200 | 430 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 890 | 100 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 890 | 42 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 2200 | 120 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 2200 | 2200 | ug/kg | |
| 67-66-3 | Chloroform | ND | 890 | 66 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 2200 | 96 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 2200 | 62 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 2200 | 500 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 2200 | 2200 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 890 | 290 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 890 | 85 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 890 | 67 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 890 | 64 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 890 | 62 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 890 | 150 | ug/kg | UJ |
| 75-34-3 | 1,1-Dichloroethane | ND | 890 | 68 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 890 | 65 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 890 | 140 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (9-10)091211 | | |
| Lab Sample ID: | MC3492-3 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | 85.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 890 | 120 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 890 | 110 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 890 | 100 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 2200 | 520 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 2200 | 82 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 2200 | 86 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 890 | 450 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 890 | 310 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 11000 | 11000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 2200 | 1400 | ug/kg | |
| 100-41-4 | Ethylbenzene | 28400 | 890 | 58 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 2200 | 2200 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 2200 | 470 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 4050 | 2200 | 71 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | 1390 | 2200 | 72 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 890 | 280 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 2200 | 370 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 2200 | 140 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 890 | 160 | ug/kg | |
| 91-20-3 | Naphthalene | 4150 | 2200 | 2200 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 8640 | 2200 | 72 | ug/kg | |
| 100-42-5 | Styrene | ND | 2200 | 220 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 2200 | 450 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 890 | 79 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 890 | 75 | ug/kg | |
| 108-88-3 | Toluene | ND | 2200 | 80 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 2200 | 490 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 2200 | 2200 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 890 | 82 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 890 | 110 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 890 | 87 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 890 | 410 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 2200 | 94 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 11100 | 2200 | 70 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2740 | 2200 | 81 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 2200 | 520 | ug/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 890 | 290 | ug/kg | UJ |
| | m,p-Xylene | 14900 | 890 | 110 | ug/kg | |
| 95-47-6 | o-Xylene | 1130 | 890 | 82 | ug/kg | |
| 1330-20-7 | Xylene (total) | 16000 | 890 | 56 | ug/kg | |

ND = Not detected  MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (9-10)091211 | | |
| Lab Sample ID: | MC3492-3 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | 85.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 113% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 109% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (9-10)091211 | | |
| Lab Sample ID: | MC3492-3 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8015 | Percent Solids: | 85.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24001.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1318 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.65 g | 10.0 ml | 25.0 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 1770 | 45 | 32 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 114% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates valne exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (9-10)091211 | | |
| Lab Sample ID: | MC3492-3 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 85.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31042.D | 5 | 09/22/11 | KD | 09/15/11 | OP26262 | GBG1105 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.3 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 5480 | 95 | 67 | mg/kg | |
| | TPH (> C28-C40) | 242 | 95 | 67 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 86% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| **Client Sample ID:** | TB91211 #1 | | |
| **Lab Sample ID:** | MC3492-4 | **Date Sampled:** | 09/12/11 |
| **Matrix:** | AQ - Trip Blank Water | **Date Received:** | 09/13/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | n/a |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M43486.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB91211 #1 | | |
| Lab Sample ID: | MC3492-4 | Date Sampled: | 09/12/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | TB91211 #1 | | |
| Lab Sample ID: | MC3492-4 | Date Sampled: | 09/12/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 91% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 93% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.5

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP42 (20-22.5)91211 | | |
| Lab Sample ID: | MC3492-5 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | 87.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V1985.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV86 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 3.03 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~29.9~~ u | ~~9.4~~ 29.9 | 2.2 | ug/kg | u |
| 107-02-8 | Acrolein | ND | 47 | 32 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 9.4 | 3.8 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.94 | 0.24 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 9.4 | 0.36 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 9.4 | 1.9 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 3.8 | 0.39 | ug/kg | |
| 75-25-2 | Bromoform | ND | 3.8 | 0.89 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 3.8 | 1.3 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 9.4 | 2.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 9.4 | 2.4 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 9.4 | 0.31 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 9.4 | 1.2 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 9.4 | 1.8 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 3.8 | 0.42 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 3.8 | 0.18 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 9.4 | 0.49 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 9.4 | 9.4 | ug/kg | |
| 67-66-3 | Chloroform | ND | 3.8 | 0.28 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 9.4 | 0.41 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 9.4 | 0.26 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 9.4 | 2.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 9.4 | 9.4 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 3.8 | 1.2 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 3.8 | 0.36 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 3.8 | 0.28 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 3.8 | 0.27 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 3.8 | 0.26 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 3.8 | 0.64 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 3.8 | 0.29 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 3.8 | 0.27 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 3.8 | 0.60 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP42 (20-22.5)91211 | | |
| Lab Sample ID: | MC3492-5 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | 87.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 3.8 | 0.51 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 3.8 | 0.47 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 3.8 | 0.43 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 9.4 | 2.2 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 9.4 | 0.35 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 9.4 | 0.36 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 3.8 | 1.9 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 3.8 | 1.3 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 47 | 47 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 9.4 | 5.9 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 3.8 | 0.24 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 9.4 | 9.4 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 9.4 | 2.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 9.4 | 0.30 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 9.4 | 0.30 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 3.8 | 1.2 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 9.4 | 1.6 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 9.4 | 0.58 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 3.8 | 0.68 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 9.4 | 9.4 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 9.4 | 0.30 | ug/kg | |
| 100-42-5 | Styrene | ND | 9.4 | 0.94 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 9.4 | 1.9 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 3.8 | 0.33 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 3.8 | 0.32 | ug/kg | |
| 108-88-3 | Toluene | 5.7 | 9.4 | 0.34 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 9.4 | 2.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 9.4 | 9.4 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 3.8 | 0.34 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 3.8 | 0.48 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 3.8 | 0.37 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 3.8 | 1.7 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 9.4 | 0.39 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 9.4 | 0.30 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 9.4 | 0.34 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 9.4 | 2.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 3.8 | 1.2 | ug/kg | |
| | m,p-Xylene | ND | 3.8 | 0.47 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 3.8 | 0.35 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 3.8 | 0.24 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.5

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP42 (20-22.5)91211 | | |
| Lab Sample ID: | MC3492-5 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | 87.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 87% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP42 (20-22.5)91211 | | |
| Lab Sample ID: | MC3492-5 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8015 | Percent Solids: | 87.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH23999.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1318 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.57 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 13 | 9.5 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 95% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP42 (20-22.5)91211 | | |
| **Lab Sample ID:** | MC3492-5 | **Date Sampled:** | 09/12/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/13/11 |
| **Method:** | SW846-8015 SW846 3546 | **Percent Solids:** | 87.8 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31019.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.7 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 18 | 13 | mg/kg | |
| | TPH ( > C28-C40) | ND | 18 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 53% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.5

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP42 (10-12.5)91211 | | |
| Lab Sample ID: | MC3492-6 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | 88.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V1986.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV86 |
| Run #2 [a] | E55703.D | 1 | 09/22/11 | GK | n/a | n/a | MSE2261 |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.11 g | 5.0 ml | |
| Run #2 | 4.50 g | 10.0 ml | 100 ul |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~14.5~~ u | ~~5.5~~ 14.5 | 1.3 | ug/kg | U |
| 107-02-8 | Acrolein | ND | 28 | 19 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.5 | 2.2 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.55 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.5 | 0.21 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.5 | 1.1 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.2 | 0.23 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.2 | 0.52 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.2 | 0.74 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.5 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.5 | 1.4 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.5 | 0.18 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.5 | 0.72 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.5 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.2 | 0.25 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.2 | 0.10 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.5 | 0.29 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.5 | 5.5 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.2 | 0.16 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.5 | 0.24 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.5 | 0.15 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.5 | 1.2 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.5 | 5.5 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.2 | 0.72 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.2 | 0.21 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.2 | 0.17 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.2 | 0.15 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.2 | 0.38 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.2 | 0.17 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.2 | 0.16 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.2 | 0.35 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP42 (10-12.5)91211 | | |
| **Lab Sample ID:** | MC3492-6 | **Date Sampled:** | 09/12/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/13/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | 88.9 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.2 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.2 | 0.28 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.2 | 0.25 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.5 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.5 | 0.20 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.5 | 0.21 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.2 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.2 | 0.75 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 28 | 28 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.5 | 3.4 | ug/kg | |
| 100-41-4 | Ethylbenzene | 3.4 | 2.2 | 0.14 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.5 | 5.5 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.5 | 1.2 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.5 | 0.17 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.5 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.2 | 0.68 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.5 | 0.92 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.5 | 0.34 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.2 | 0.40 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.5 | 5.5 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 0.85 | 5.5 | 0.18 | ug/kg | J |
| 100-42-5 | Styrene | ND | 5.5 | 0.55 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.5 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.2 | 0.19 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.2 | 0.19 | ug/kg | |
| 108-88-3 | Toluene | 7.4 | 5.5 | 0.20 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.5 | 1.2 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.5 | 5.5 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.2 | 0.28 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.2 | 0.22 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.2 | 1.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.5 | 0.23 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 0.90 | 5.5 | 0.17 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.5 | 0.20 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.5 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.2 | 0.71 | ug/kg | |
| | m,p-Xylene | ND | 2.2 | 0.28 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.2 | 0.20 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.2 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP42 (10-12.5)91211 | | |
| **Lab Sample ID:** | MC3492-6 | **Date Sampled:** | 09/12/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/13/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | 88.9 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

**VOA Special List**

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 78% | 95% | 70-130% |
| 2037-26-5 | Toluene-D8 | 89% | 108% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 98% | 70-130% |

(a) Confirmation run.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP42 (10-12.5)91211 | | |
| Lab Sample ID: | MC3492-6 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8015 | Percent Solids: | 88.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH23997.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1318 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.30 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 14 | 9.9 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 87% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP42 (10-12.5)91211 | | |
| Lab Sample ID: | MC3492-6 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 88.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31017.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.3 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 18 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 18 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 67% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.7

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP42 (30-31.5)91211 | | |
| Lab Sample ID: | MC3492-7 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | 92.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2071.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |
| Run #2 | V2102.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.57 g | 5.0 ml |
| Run #2 | 4.16 g | 5.0 ml |

VOA Special List

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~20.2~~ a U | ~~6.5~~ 20.2 | ug/kg | B U |
| 107-02-8 | Acrolein | ND | 30 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.9 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.59 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.9 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.9 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.4 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.4 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.4 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.9 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.9 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.9 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.9 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.9 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.4 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.4 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.9 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.9 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.4 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.9 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.9 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.9 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.9 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.4 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.4 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.4 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.4 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.4 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.4 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.4 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.4 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.4 | ug/kg | |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP42 (30-31.5)91211 | | |
| Lab Sample ID: | MC3492-7 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | 92.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.4 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.4 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.4 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.9 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.9 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.9 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.4 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.4 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 30 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.9 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.4 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.9 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.9 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.9 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.9 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.4 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.9 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.9 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.4 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.9 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.9 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.9 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.9 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.4 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.4 | ug/kg | |
| 108-88-3 | Toluene | 6.0 | 5.9 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.9 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.9 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.4 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.4 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.4 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.4 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.9 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.9 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.9 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.9 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.4 | ug/kg | |
| | m,p-Xylene | ND | 2.4 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.4 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.4 | ug/kg | |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP42 (30-31.5)91211 | | |
| Lab Sample ID: | MC3492-7 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | 92.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 97% | 97% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | 97% | 70-130% |

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presnmptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP42 (30-31.5)91211 | | |
| Lab Sample ID: | MC3492-7 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8015 | Percent Solids: | 92.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH23998.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1318 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.45 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 13 | 9.1 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 80% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP42 (30-31.5)91211 | | |
| **Lab Sample ID:** | MC3492-7 | **Date Sampled:** | 09/12/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/13/11 |
| **Method:** | SW846-8015 SW846 3546 | **Percent Solids:** | 92.2 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31018.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.8 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | 12 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 70% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.8

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP42 (20-22.5)91211 | | |
| Lab Sample ID: | MC3492-8 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | 89.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2103.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |
| Run #2 | V2072.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 1.99 g | 5.0 ml |
| Run #2 | 4.68 g | 5.0 ml |

VOA Special List

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~53.0~~ U | ~~14~~ 53.0 | ug/kg | B U |
| 107-02-8 | Acrolein | ND | 70 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 14 | ug/kg | |
| 71-43-2 | Benzene | ND | 1.4 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 14 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 14 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 5.6 | ug/kg | |
| 75-25-2 | Bromoform | ND | 5.6 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 5.6 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 14 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 14 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 14 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 14 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 14 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 5.6 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 5.6 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 14 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND [a] | 6.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 5.6 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 14 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 14 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 14 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 5.6 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 5.6 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzeue | ND | 5.6 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 5.6 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 5.6 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 5.6 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 5.6 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 5.6 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 5.6 | ug/kg | |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP42 (20-22.5)91211 | | |
| Lab Sample ID: | MC3492-8 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | 89.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 5.6 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 5.6 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 5.6 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 14 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 14 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 14 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 5.6 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 5.6 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 70 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 14 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 5.6 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 14 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 14 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 14 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 14 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 5.6 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 14 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 14 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 5.6 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 14 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 14 | ug/kg | |
| 100-42-5 | Styrene | ND | 14 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 14 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 5.6 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 5.6 | ug/kg | |
| 108-88-3 | Toluene | ND | 14 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 14 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 14 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 5.6 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 5.6 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 5.6 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 5.6 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 14 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 14 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 14 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 14 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 5.6 | ug/kg | |
| | m,p-Xylene | ND | 5.6 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 5.6 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 5.6 | ug/kg | |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP42 (20-22.5)91211 | | |
| Lab Sample ID: | MC3492-8 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | 89.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | 101% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 89% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | 84% | 70-130% |

(a) Result is from Run# 2

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP42 (20-22.5)91211 | | |
| Lab Sample ID: | MC3492-8 | Date Sampled: | 09/12/11 |
| Matrix: | SO - Soil | Date Received: | 09/13/11 |
| Method: | SW846 8015 | Percent Solids: | 89.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #I | BH24006.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1318 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.99 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 15 | 11 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 95% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP42 (20-22.5)91211 | | |
| **Lab Sample ID:** | MC3492-8 | **Date Sampled:** | 09/12/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/13/11 |
| **Method:** | SW846-8015 SW846 3546 | **Percent Solids:** | 89.7 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31020.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.3 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 18 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 18 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 49% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.6

| | | | |
|---|---|---|---|
| Client Sample ID: | TB91211 #2 | | |
| Lab Sample ID: | MC3492-9 | Date Sampled: | 09/12/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M43487.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | TB91211 #2 | | |
| **Lab Sample ID:** | MC3492-9 | **Date Sampled:** | 09/12/11 |
| **Matrix:** | AQ - Trip Blank Water | **Date Received:** | 09/13/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | n/a |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.6

| | | | |
|---|---|---|---|
| Client Sample ID: | TB91211 #2 | | |
| Lab Sample ID: | MC3492-9 | Date Sampled: | 09/12/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/13/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 90% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES



## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

1 of 2

# Shell Oil Products Chain Of Custody Record

URS

LAB (LOCATION)
☐ XENCO (_____)
☐ CALSCIENCE (_____)
☑ other Accutest Labs; 495 Technology Ctr W
☐ Lab Vendor # (_____)
☐ SPL (_____)
Lab Vendor #

Please Check Appropriate Box:
☑ ENV. SERVICES ☐ MOTIVA RETAIL ☐ SHELL RET.
☐ MOTIVA SOMCH ☐ CONSULTANT ☐ UDS
☐ SHELL PIPELINE ☐ OTHER

Print Bill To Contact Name: Jeff Adams
P.O. #
INCIDENT # (ENV. SERVICES) 0 7 2 1 6 5 4 0
SAP # 3 4 0 0 0 8 1
☐ CHECK IF NO INCIDENT # APPLIES
DATE: 9/12/11
PAGE: 1 of 2

SAMPLING COMPANY: URS CORPORATION
LOG CODE
SITE ADDRESS: Street and City: 170 EAST RAND AVENUE – HARTFORD
State: IL
GLOBAL ID NO
ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300; ST. LOUIS, MO 63110
P.O. DELIVERABLE TO (Name, Company, Office Location): PHONE NO: E-MAIL:
CONSULTANT PROJECT NO: Rosana SVE Install 2011 / 21562583.00014
PROJECT CONTACT (Hardcopy or PDF Report to): Elizabeth Kunkel
SAMPLER NAME(S) (Print):
LAB USE ONLY: MC3492
TELEPHONE: 314-743-4179 FAX: 314-429-0462 Bill To Contact E-MAIL: elizabeth.kunkel@urscorp.com
TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (10 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

REQUESTED ANALYSIS

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY:
DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD
TEMPERATURE ON RECEIPT C° Cooler #1 Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
* Please include "J" values on Reports.
* Please provide sample receipt upon login.
☑ SHELL CONTRACT RATE APPLIES
☐ STATE REIMBURSEMENT RATE APPLIES
☐ EDD NOT NEEDED
☑ RECEIPT VERIFICATION REQUESTED
☐ PROVIDE LEDD DISK

FIELD NOTES:
TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE: HCL | HNO3 | H2SO4 | COOL | MeOH | NONE | OTHER | # of Cont. | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | MC3492 | |
| ✓ | 10 UMP 38(9-10) 9/12/11 | 9/12/11 | 1332 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | SW 9/12/11 | -1 | |
| + | UMP 42(20-22) 9/12/11 | 9/12/11 | 1200 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | SW 9/12/11 | | |
| * | UMP 42(10-12) 9/12/11 | 9/12/11 | 1145 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | SW 9/12/11 | | |
| * | UMP 42 MS DS 9/12/11 | 9/12/11 | 1200 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | SW 9/12/11 | | |
| * | UMP 42(10-12.5) 9/12/11 | 9/12/11 | 1145 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | SW 9/12/11 | | |
| + | UMP 42(30-31.5) 9/12/11 | 9/12/11 | 1215 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | SW 9/12/11 | | |
| * | UMP 42(20-22) Dup 9/12/11 | 9/12/11 | 1200 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | SW 9/12/11 | | |
| ✓ | 11 UMP 42(30-31) 9/12/11 | 9/12/11 | 1530 | Water | 4 | | | | | 2 | | 6 | X | X | | -2 | |
| ✓ | 12 UMP 37(9-10) 9/12/11 | 9/12/11 | 1436 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | -3 | 1GFF,4HS,9F |
| ✓ | 13 TB 9/12/11 #1 | 9/12/11 | 1700 | H2O | 1 | | | | | | | | X | | | -4 | 1OF5 |

| Relinquished by: (Signature) | Received by: (Signature) | Date | Time |
|---|---|---|---|
| [signature] | FedEx | 9/12/11 | 1745 |
| FedEx | [signature] Barry | 9/13/11 9:30 | |
| | | | 1-7, 1.4 |

05/2010 Revision

**MC3492: Chain of Custody**
**Page 1 of 3**

2 of 2

# Shell Oil Products Chain Of Custody Record

URS

LAB (LOCATION)
- ☐ XENCO ( )
- ☐ CALSCIENCE ( )
- ☑ OTHER Accutest Labs; 495 Technology Ctr W
- ☐ Lab Vendor # ( )
- ☐ SPL ( )

Lab Vendor #

Please Check Appropriate Box:
- ☑ ENV. SERVICES
- ☐ MOTIVA RETAIL
- ☐ SHELL RET
- ☐ MOTIVA SD&CM
- ☐ CONSULTANT
- ☐ LUBES
- ☐ SHELL PIPELINE
- ☐ OTHER

Print Bill To Contact Name: Jeff Adams

PO #

INCIDENT # (ENV SERVICES): 9 7 2 1 5 6 4 0

SAP #: 3 4 0 0 6 1

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 9/12/11

PAGE: 2 of 2

SAMPLING COMPANY: URS CORPORATION

LOG CODE:

SITE ADDRESS: Street and City: 170 EAST RAND AVENUE – HARTFORD

State: IL

GLOBAL ID NO:

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300; ST. LOUIS, MO 63110

TEST DELIVERABLE TO (Name, Company, Office Location):

PHONE NO:

E-MAIL:

CONSULTANT PROJECT NO: Roxana SVE Install 2011 / 21562593.00014

PROJECT CONTACT (Hardcopy or PDF Report to): Elizabeth Kunkel

TELEPHONE: 314-743-4179

FAX: 314-429-0462

BILL TO CONTACT E-MAIL: elizabeth.kunkel@urscorp.com

SAMPLER NAME(S) (Print):

LAB USE ONLY: MC3492

TURNAROUND TIME (CALENDAR DAYS):
- ☑ STANDARD (14 DAY)
- ☐ 5 DAYS
- ☐ 3 DAYS
- ☐ 2 DAYS
- ☐ 24 HOURS
- ☐ RESULTS NEEDED ON WEEKEND

REQUESTED ANALYSIS

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY.

DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C°: Cooler #1 | Cooler #2 | Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
- * Please include "J" values on Reports.
- * Please provide sample receipt upon login.

- ☑ SHELL CONTRACT RATE APPLIES
- ☐ STATE REIMBURSEMENT RATE APPLIES
- ☐ EDD NOT NEEDED
- ☑ RECEIPT VERIFICATION REQUESTED
- ☐ PROVIDE LEDD DISK

FIELD NOTES:

TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE HCL | HNO3 | H2SO4 | CH3OH | NaHSO4 | NONE | OTHER | # of Cont | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | VMP 42 (20-22.5) 9/12/11 | 9/12/11 | 1200 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | -5 | |
| 5 | VMP 42 (10-12.5) 9/12/11 | 9/12/11 | 1145 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | -6 | |
| 6 | VMP 42 (~~[illegible]~~) (~~[illegible]~~) 9/12/11 | | 1220 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | -6.5 | |
| 6 | VMP 42 (10-12.5) 9/12/11 | 9/12/11 | 1145 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | -6.5D | |
| 7 | VMP 42 (30-31.5) 9/12/11 | 9/12/11 | 1215 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | -7 | |
| 8 | VMP 42 (20-22.5) 9/12/11 | 9/12/11 | 1200 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | TB | -8 | |
| 9 | TB 9/12/11 #2 | 9/12/11 | 1725 | Water | X | | | | | | | 1 | X | | | -9 | |

| Relinquished by (Signature) | Received by (Signature) | Date | Time |
|---|---|---|---|
| [signature] | FedEx | 9/12/11 | 1745 |
| FedEx | [signature] | 9/13/11 | 9:30 |
| | | | 1-7, 1-4 |

MC3492: Chain of Custody
Page 2 of 3

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC3492 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 9/13/2011 Delivery Method: Client Service Action Required at Login: No

Project: 170 EAST RAND AVE HARTFORD IL No. Coolers: 2 Airbill #'s: N/A

| Cooler Security | Y | or | N | | Y | or | N |
|---|---|---|---|---|---|---|---|
| 1. Custody Seals Present: | ☑ | | ☐ | 3. COC Present: | ☑ | | ☐ |
| 2. Custody Seals Intact: | ☑ | | ☐ | 4. Smpl Dates/Time OK | ☑ | | ☐ |

| Cooler Temperature | Y | or | N |
|---|---|---|---|
| 1. Temp criteria achieved: | ☑ | | ☐ |
| 2. Cooler temp verification: | Infared gun | | |
| 3. Cooler media: | Ice (bag) | | |

| Quality Control Preservatio | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Trip Blank present / cooler: | ☑ | | ☐ | ☐ |
| 2. Trip Blank listed on COC: | ☑ | | ☐ | ☐ |
| 3. Samples preserved properly: | ☑ | | ☐ | |
| 4. VOCs headspace free: | ☑ | | ☐ | ☐ |

| Sample Integrity - Documentation | Y | or | N |
|---|---|---|---|
| 1. Sample labels present on bottles: | ☑ | | ☐ |
| 2. Container labeling complete: | ☑ | | ☐ |
| 3. Sample container label / COC agree: | ☑ | | ☐ |

| Sample Integrity - Condition | Y | or | N |
|---|---|---|---|
| 1. Sample recvd within HT: | ☑ | | ☐ |
| 2. All containers accounted for: | ☑ | | ☐ |
| 3. Condition of sample: | Intact | | |

| Sample Integrity - Instructions | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Analysis requested is clear: | ☑ | | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | | ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ | | ☐ | |
| 4. Compositing instructions clear: | ☐ | | ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ | | ☐ | ☑ |

Comments

Accutest Laboratories
V 508.481.6200
495 Technology Center West, Bldg One
F 508.481.7753
Marlborough, MA
www.accutest.com

4.1
4

**MC3492: Chain of Custody**
**Page 3 of 3**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3492

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3492-1 | Collected: 12-SEP-11 13:32 By: SW | | Received: 13-SEP-11 By: JB | | | |
| VMP38 (9-10)091211 | | | | | | |
| MC3492-1 | SM21 2540 B MOD. | 15-SEP-11 | HS | | | %SOL |
| MC3492-1 | SW846 8260B | 15-SEP-11 13:59 | GK | | | V8260SL |
| MC3492-1 | SW846 8015 | 20-SEP-11 21:07 | WS | | | V8015GRO |
| MC3492-1 | SW846-8015 | 22-SEP-11 04:51 | KD | 15-SEP-11 | MT | B8015DROORO |
| MC3492-2 | Collected: 12-SEP-11 15:30 By: SW | | Received: 13-SEP-11 By: JB | | | |
| VMP42 (30-31)091211 EB | | | | | | |
| MC3492-2 | SW846 8015 | 20-SEP-11 16:29 | WS | | | V8015GRO |
| MC3492-2 | SW846 8260B | 21-SEP-11 19:06 | TD | | | V8260SL |
| MC3492-2 | SW846-8015 | 24-SEP-11 18:05 | KD | 19-SEP-11 | FC | B8015DROORO |
| MC3492-3 | Collected: 12-SEP-11 14:56 By: SW | | Received: 13-SEP-11 By: JB | | | |
| VMP39 (9-10)091211 | | | | | | |
| MC3492-3 | SM21 2540 B MOD. | 15-SEP-11 | HS | | | %SOL |
| MC3492-3 | SW846 8260B | 15-SEP-11 14:30 | GK | | | V8260SL |
| MC3492-3 | SW846 8015 | 20-SEP-11 21:47 | WS | | | V8015GRO |
| MC3492-3 | SW846-8015 | 22-SEP-11 11:20 | KD | 15-SEP-11 | MT | B8015DROORO |
| MC3492-4 | Collected: 12-SEP-11 17:00 By: SW | | Received: 13-SEP-11 By: JB | | | |
| TB91211 #1 | | | | | | |
| MC3492-4 | SW846 8260B | 21-SEP-11 17:39 | TD | | | V8260SL |
| MC3492-5 | Collected: 12-SEP-11 12:00 By: SW | | Received: 13-SEP-11 By: JB | | | |
| VMP42 (20-22.5)91211 | | | | | | |
| MC3492-5 | SM21 2540 B MOD. | 15-SEP-11 | HS | | | %SOL |
| MC3492-5 | SW846 8015 | 20-SEP-11 20:27 | WS | | | V8015GRO |
| MC3492-5 | SW846-8015 | 21-SEP-11 15:05 | KD | 15-SEP-11 | MT | B8015DROORO |
| MC3492-5 | SW846 8260B | 22-SEP-11 01:48 | AMY | | | V8260SL |
| MC3492-6 | Collected: 12-SEP-11 11:45 By: SW | | Received: 13-SEP-11 By: JB | | | |
| VMP42 (10-12.5)91211 | | | | | | |
| MC3492-6 | SM21 2540 B MOD. | 15-SEP-11 | HS | | | %SOL |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3492

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3492-6 | SW846 8015 | 20-SEP-11 19:08 | WS | | | V8015GRO |
| MC3492-6 | SW846-8015 | 21-SEP-11 13:34 | KD | 15-SEP-11 | MT | B8015DROORO |
| MC3492-6 | SW846 8260B | 22-SEP-11 02:18 | AMY | | | V8260SL |
| MC3492-6 | SW846 8260B | 22-SEP-11 13:45 | GK | | | V8260SL |
| MC3492-7 | Collected: 12-SEP-11 12:15 By: SW | | Received: 13-SEP-11 By: JB | | | |
| VMP42 (30-31.5)91211 | | | | | | |
| MC3492-7 | SM21 2540 B MOD. | 15-SEP-11 | HS | | | %SOL |
| MC3492-7 | SW846 8015 | 20-SEP-11 19:47 | WS | | | V8015GRO |
| MC3492-7 | SW846-8015 | 21-SEP-11 14:20 | KD | 15-SEP-11 | MT | B8015DROORO |
| MC3492-7 | SW846 8260B | 25-SEP-11 10:06 | AMY | | | V8260SL |
| MC3492-7 | SW846 8260B | 26-SEP-11 12:53 | AMY | | | V8260SL |
| MC3492-8 | Collected: 12-SEP-11 12:00 By: SW | | Received: 13-SEP-11 By: JB | | | |
| VMP42 (20-22.5)91211 | | | | | | |
| MC3492-8 | SM21 2540 B MOD. | 15-SEP-11 | HS | | | %SOL |
| MC3492-8 | SW846 8015 | 21-SEP-11 01:05 | WS | | | V8015GRO |
| MC3492-8 | SW846-8015 | 21-SEP-11 15:51 | KD | 15-SEP-11 | MT | B8015DROORO |
| MC3492-8 | SW846 8260B | 25-SEP-11 10:36 | AMY | | | V8260SL |
| MC3492-8 | SW846 8260B | 26-SEP-11 13:23 | AMY | | | V8260SL |
| MC3492-9 | Collected: 12-SEP-11 17:25 By: SW | | Received: 13-SEP-11 By: JB | | | |
| TB91211 #2 | | | | | | |
| MC3492-9 | SW846 8260B | 21-SEP-11 18:09 | TD | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/13/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3492-1.1 | Walk In Ref #9 | Hamid Siamak | 09/15/11 08:35 | Retrieve from Storage |
| MC3492-1.1 | Hamid Siamak | Walk In Ref #9 | 09/15/11 11:04 | Return to Storage |
| MC3492-1.1 | Walk In Ref #9 | Mahmoud Afzali | 09/15/11 11:13 | Retrieve from Storage |
| MC3492-1.1 | Mahmoud Afzali | Walk In Ref #9 | 09/17/11 08:17 | Return to Storage |
| MC3492-1.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-1.6 | VOC Ref #10 | Gary Krasinski | 09/14/11 11:52 | Retrieve from Storage |
| MC3492-1.6 | Gary Krasinski | VOC Ref #10 | 09/14/11 14:11 | Return to Storage |
| MC3492-1.6 | VOC Ref #10 | William Shao | 09/20/11 09:46 | Retrieve from Storage |
| MC3492-1.6 | William Shao | GCBH | 09/20/11 09:47 | Load on Instrument |
| MC3492-1.6 | GCBH | William Shao | 09/20/11 09:47 | Unload from Instrument |
| MC3492-1.6 | William Shao | VOC Ref #10 | 09/20/11 09:47 | Return to Storage |
| MC3492-1.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-2.2 | Walk In Ref #22 | Mahmoud Afzali | 09/19/11 13:48 | Retrieve from Storage |
| MC3492-2.2 | Mahmoud Afzali | | 09/20/11 09:38 | Depleted |
| MC3492-2.3 | VOC Ref #4 | Jugal Patel | 09/19/11 16:48 | Retrieve from Storage |
| MC3492-2.3 | Jugal Patel | VOC Ref #4 | 09/21/11 10:24 | Return to Storage |
| MC3492-2.3 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-2.4 | VOC Ref #4 | William Shao | 09/20/11 09:44 | Retrieve from Storage |
| MC3492-2.4 | William Shao | GCBH | 09/20/11 09:44 | Load on Instrument |
| MC3492-2.4 | GCBH | William Shao | 09/20/11 09:45 | Unload from Instrument |
| MC3492-2.4 | William Shao | VOC Ref #4 | 09/20/11 09:45 | Return to Storage |
| MC3492-2.4 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-3.1 | Walk In Ref #9 | Hamid Siamak | 09/15/11 08:35 | Retrieve from Storage |
| MC3492-3.1 | Hamid Siamak | Walk In Ref #9 | 09/15/11 11:04 | Return to Storage |
| MC3492-3.1 | Walk In Ref #9 | Mahmoud Afzali | 09/15/11 11:13 | Retrieve from Storage |
| MC3492-3.1 | Mahmoud Afzali | Walk In Ref #9 | 09/17/11 08:17 | Return to Storage |
| MC3492-3.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-3.5 | VOC Ref #10 | Gary Krasinski | 09/14/11 11:52 | Retrieve from Storage |
| MC3492-3.5 | Gary Krasinski | VOC Ref #10 | 09/16/11 09:30 | Return to Storage |
| MC3492-3.5 | VOC Ref #10 | William Shao | 09/20/11 09:46 | Retrieve from Storage |
| MC3492-3.5 | William Shao | GCBH | 09/20/11 09:47 | Load on Instrument |
| MC3492-3.5 | GCBH | William Shao | 09/20/11 09:47 | Unload from Instrument |
| MC3492-3.5 | William Shao | VOC Ref #10 | 09/20/11 09:47 | Return to Storage |
| MC3492-3.5 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-4.1 | VOC Ref #4 | Jugal Patel | 09/19/11 16:48 | Retrieve from Storage |
| MC3492-4.1 | Jugal Patel | VOC Ref #4 | 09/21/11 10:24 | Return to Storage |
| MC3492-4.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |

# Accutest Internal Chain of Custody

Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/13/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3492-5.1 | Walk In Ref #9 | Hamid Siamak | 09/15/11 08:35 | Retrieve from Storage |
| MC3492-5.1 | Hamid Siamak | Walk In Ref #9 | 09/15/11 11:04 | Return to Storage |
| MC3492-5.1 | Walk In Ref #9 | Mahmoud Afzali | 09/15/11 11:13 | Retrieve from Storage |
| MC3492-5.1 | Mahmoud Afzali | Walk In Ref #9 | 09/17/11 08:17 | Return to Storage |
| MC3492-5.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-5.4 | VOC Ref #10 | Amy Min Yang | 09/21/11 18:58 | Retrieve from Storage |
| MC3492-5.4 | Amy Min Yang | GCMSV | 09/21/11 18:58 | Load on Instrument |
| MC3492-5.4 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3492-5.4 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3492-5.4 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-5.6 | VOC Ref #10 | Gary Krasinski | 09/14/11 11:52 | Retrieve from Storage |
| MC3492-5.6 | Gary Krasinski | VOC Ref #10 | 09/14/11 14:11 | Return to Storage |
| MC3492-5.6 | VOC Ref #10 | William Shao | 09/20/11 09:46 | Retrieve from Storage |
| MC3492-5.6 | William Shao | GCBH | 09/20/11 09:47 | Load on Instrument |
| MC3492-5.6 | GCBH | William Shao | 09/20/11 09:47 | Unload from Instrument |
| MC3492-5.6 | William Shao | VOC Ref #10 | 09/20/11 09:47 | Return to Storage |
| MC3492-5.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-6.1 | Walk In Ref #9 | Hamid Siamak | 09/15/11 08:35 | Retrieve from Storage |
| MC3492-6.1 | Hamid Siamak | Walk In Ref #9 | 09/15/11 11:04 | Return to Storage |
| MC3492-6.1 | Walk In Ref #9 | Mahmoud Afzali | 09/15/11 11:13 | Retrieve from Storage |
| MC3492-6.1 | Mahmoud Afzali | Walk In Ref #9 | 09/17/11 08:17 | Return to Storage |
| MC3492-6.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-6.7 | VOC Ref #10 | Amy Min Yang | 09/21/11 18:58 | Retrieve from Storage |
| MC3492-6.7 | Amy Min Yang | GCMSV | 09/21/11 18:58 | Load on Instrument |
| MC3492-6.7 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3492-6.7 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3492-6.7 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-6.8 | VOC Ref #10 | Amy Min Yang | 09/22/11 17:02 | Retrieve from Storage |
| MC3492-6.8 | Amy Min Yang | GCMSV | 09/22/11 17:02 | Load on Instrument |
| MC3492-6.8 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3492-6.8 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3492-6.8 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-6.9 | VOC Ref #10 | Amy Min Yang | 09/21/11 18:58 | Retrieve from Storage |
| MC3492-6.9 | Amy Min Yang | GCMSV | 09/21/11 18:58 | Load on Instrument |
| MC3492-6.9 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3492-6.9 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3492-6.9 | Scott Parsick | | 11/03/11 14:23 | Disposed |

# Accutest Internal Chain of Custody

Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/13/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3492-6.10 | VOC Ref #10 | Amy Min Yang | 09/22/11 17:02 | Retrieve from Storage |
| MC3492-6.10 | Amy Min Yang | GCMSV | 09/22/11 17:02 | Load on Instrument |
| MC3492-6.10 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3492-6.10 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3492-6.10 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-6.11 | VOC Ref #10 | Amy Min Yang | 09/21/11 18:58 | Retrieve from Storage |
| MC3492-6.11 | Amy Min Yang | GCMSV | 09/21/11 18:58 | Load on Instrument |
| MC3492-6.11 | GCMSV | Amy Min Yang | 09/23/11 08:53 | Unload from Instrument |
| MC3492-6.11 | Amy Min Yang | VOC Ref #10 | 09/23/11 08:53 | Return to Storage |
| MC3492-6.11 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-6.14 | VOC Ref #10 | Gary Krasinski | 09/14/11 11:52 | Retrieve from Storage |
| MC3492-6.14 | Gary Krasinski | VOC Ref #10 | 09/16/11 09:30 | Return to Storage |
| MC3492-6.14 | VOC Ref #10 | William Shao | 09/20/11 09:46 | Retrieve from Storage |
| MC3492-6.14 | William Shao | GCBH | 09/20/11 09:47 | Load on Instrument |
| MC3492-6.14 | GCBH | William Shao | 09/20/11 09:47 | Unload from Instrument |
| MC3492-6.14 | William Shao | VOC Ref #10 | 09/20/11 09:47 | Return to Storage |
| MC3492-6.14 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-7.1 | Walk In Ref #9 | Hamid Siamak | 09/15/11 08:35 | Retrieve from Storage |
| MC3492-7.1 | Hamid Siamak | Walk In Ref #9 | 09/15/11 11:04 | Return to Storage |
| MC3492-7.1 | Walk In Ref #9 | Mahmoud Afzali | 09/15/11 11:13 | Retrieve from Storage |
| MC3492-7.1 | Mahmoud Afzali | Walk In Ref #9 | 09/17/11 08:17 | Return to Storage |
| MC3492-7.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-7.3 | VOC Ref #10 | Amy Min Yang | 09/26/11 08:56 | Retrieve from Storage |
| MC3492-7.3 | Amy Min Yang | GCMSV | 09/26/11 08:57 | Load on Instrument |
| MC3492-7.3 | GCMSV | Amy Min Yang | 09/27/11 07:45 | Unload from Instrument |
| MC3492-7.3 | Amy Min Yang | Freezer #6 | 09/27/11 07:45 | Return to Storage |
| MC3492-7.3 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-7.4 | VOC Ref #10 | Amy Min Yang | 09/24/11 16:03 | Retrieve from Storage |
| MC3492-7.4 | Amy Min Yang | GCMSV | 09/24/11 16:03 | Load on Instrument |
| MC3492-7.4 | GCMSV | Amy Min Yang | 09/27/11 07:45 | Unload from Instrument |
| MC3492-7.4 | Amy Min Yang | VOC Ref #10 | 09/27/11 07:45 | Return to Storage |
| MC3492-7.4 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-7.5 | VOC Ref #10 | Gary Krasinski | 09/14/11 11:52 | Retrieve from Storage |
| MC3492-7.5 | Gary Krasinski | VOC Ref #10 | 09/16/11 09:30 | Return to Storage |
| MC3492-7.5 | VOC Ref #10 | William Shao | 09/20/11 09:46 | Retrieve from Storage |
| MC3492-7.5 | William Shao | GCBH | 09/20/11 09:47 | Load on Instrument |
| MC3492-7.5 | GCBH | William Shao | 09/20/11 09:47 | Unload from Instrument |

# Accutest Internal Chain of Custody



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/13/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3492-7.5 | William Shao | VOC Ref #10 | 09/20/11 09:47 | Return to Storage |
| MC3492-7.5 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-8.1 | Walk In Ref #9 | Hamid Siamak | 09/15/11 08:35 | Retrieve from Storage |
| MC3492-8.1 | Hamid Siamak | Walk In Ref #9 | 09/15/11 11:04 | Return to Storage |
| MC3492-8.1 | Walk In Ref #9 | Mahmoud Afzali | 09/15/11 11:13 | Retrieve from Storage |
| MC3492-8.1 | Mahmoud Afzali | Walk In Ref #9 | 09/17/11 08:17 | Return to Storage |
| MC3492-8.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-8.3 | VOC Ref #10 | Amy Min Yang | 09/26/11 08:56 | Retrieve from Storage |
| MC3492-8.3 | Amy Min Yang | GCMSV | 09/26/11 08:57 | Load on Instrument |
| MC3492-8.3 | GCMSV | Amy Min Yang | 09/27/11 07:45 | Unload from Instrument |
| MC3492-8.3 | Amy Min Yang | Freezer #6 | 09/27/11 07:45 | Return to Storage |
| MC3492-8.3 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-8.4 | VOC Ref #10 | Amy Min Yang | 09/24/11 16:03 | Retrieve from Storage |
| MC3492-8.4 | Amy Min Yang | GCMSV | 09/24/11 16:03 | Load on Instrument |
| MC3492-8.4 | GCMSV | Amy Min Yang | 09/27/11 07:45 | Unload from Instrument |
| MC3492-8.4 | Amy Min Yang | VOC Ref #10 | 09/27/11 07:45 | Return to Storage |
| MC3492-8.4 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-8.5 | VOC Ref #10 | Gary Krasinski | 09/14/11 11:52 | Retrieve from Storage |
| MC3492-8.5 | Gary Krasinski | VOC Ref #10 | 09/14/11 14:11 | Return to Storage |
| MC3492-8.5 | VOC Ref #10 | William Shao | 09/20/11 09:46 | Retrieve from Storage |
| MC3492-8.5 | William Shao | GCBH | 09/20/11 09:47 | Load on Instrument |
| MC3492-8.5 | GCBH | William Shao | 09/20/11 09:47 | Unload from Instrument |
| MC3492-8.5 | William Shao | VOC Ref #10 | 09/20/11 09:47 | Return to Storage |
| MC3492-8.5 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3492-9.1 | VOC Ref #4 | Jugal Patel | 09/19/11 16:48 | Retrieve from Storage |
| MC3492-9.1 | Jugal Patel | VOC Ref #4 | 09/21/11 10:24 | Return to Storage |
| MC3492-9.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |

New England ACCUTEST LABORATORIES



## GC/MS Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSE2259-MB | E55594.D | 1 | 09/15/11 | GK | n/a | n/a | MSE2259 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-1, MC3492-3

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 250 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 250 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 100 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | ug/kg | |

# Method Blank Summary

Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSE2259-MB | E55594.D | 1 | 09/15/11 | GK | n/a | n/a | MSE2259 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-1, MC3492-3

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | ug/kg | |
| | m,p-Xylene | ND | 100 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | ug/kg | |

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSE2259-MB | E55594.D | 1 | 09/15/11 | GK | n/a | n/a | MSE2259 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-1, MC3492-3

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | 70-130% |
| 2037-26-5 | Toluene-D8 | 111% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 104% | 70-130% |

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1398-MB | M43476.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-2, MC3492-4, MC3492-9

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | ug/l | |

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1398-MB | M43476.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-2, MC3492-4, MC3492-9

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | ug/l | |
| | m,p-Xylene | ND | 1.0 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | ug/l | |

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1398-MB | M43476.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-2, MC3492-4, MC3492-9

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | 70-130% |

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV86-MB | V1973.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV86 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-5, MC3492-6

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | ug/kg | |

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Bateh | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV86-MB | V1973.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV86 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-5, MC3492-6

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | ug/kg | |

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV86-MB | V1973.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV86 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-5, MC3492-6

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 93% | 70-130% |
| 2037-26-5 | Toluene-D8 | 94% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | 70-130% |

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV91-MB | V2069.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-7, MC3492-8

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 107-02-8 | Acrolein | ND | 25 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | ug/kg | |

# Method Blank Summary

Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV91-MB | V2069.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-7, MC3492-8

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | ug/kg | |

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV91-MB | V2069.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-7, MC3492-8

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | 70-130% |

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV92-MB | V2095A.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-7, MC3492-8

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 12.7 | 5.0 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | ug/kg | |

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV92-MB | V2095A.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-7, MC3492-8

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | ug/kg | |

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV92-MB | V2095A.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-7, MC3492-8

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 96% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV86-MB1 | V1991.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV86 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-6MS, MC3492-6MSD

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | ug/kg | |

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV86-MB1 | V1991.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV86 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-6MS, MC3492-6MSD

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | ug/kg | |

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV86-MB1 | V1991.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV86 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-6MS, MC3492-6MSD

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

# Blank Spike Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSE2259-BS | E55591.D | 1 | 09/15/11 | GK | n/a | n/a | MSE2259 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-1, MC3492-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 1990 | 80 | 70-130 |
| 107-02-8 | Acrolein | 12500 | 29700 | 238* a | 70-130 |
| 107-13-1 | Acrylonitrile | 2500 | 11000 | 440* a | 70-130 |
| 71-43-2 | Benzene | 2500 | 2320 | 93 | 70-130 |
| 108-86-1 | Bromobenzene | 2500 | 2240 | 90 | 70-130 |
| 74-97-5 | Bromochloromethane | 2500 | 2210 | 88 | 70-130 |
| 75-27-4 | Bromodichloromethane | 2500 | 2360 | 94 | 70-130 |
| 75-25-2 | Bromoform | 2500 | 2120 | 85 | 70-130 |
| 74-83-9 | Bromomethane | 2500 | 2080 | 83 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 2020 | 81 | 70-130 |
| 104-51-8 | u-Butylbenzene | 2500 | 2640 | 106 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2630 | 105 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2610 | 104 | 70-130 |
| 75-15-0 | Carbon disulfide | 2500 | 2200 | 88 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2480 | 99 | 70-130 |
| 108-90-7 | Chlorobenzene | 2500 | 2220 | 89 | 70-130 |
| 75-00-3 | Chloroethane | 2500 | 2270 | 91 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 741 | 30 | 10-160 |
| 67-66-3 | Chloroform | 2500 | 2420 | 97 | 70-130 |
| 74-87-3 | Chloromethane | 2500 | 1770 | 71 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2360 | 94 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2380 | 95 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 2500 | 2420 | 97 | 70-130 |
| 124-48-1 | Dibromochloromethane | 2500 | 2190 | 88 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 2500 | 1990 | 80 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2270 | 91 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2330 | 93 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2360 | 94 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 1250 | 50* b | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2420 | 97 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2310 | 92 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2310 | 92 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2240 | 90 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2240 | 90 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2260 | 90 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 1980 | 79 | 70-130 |

# Blank Spike Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSE2259-BS | E55591.D | 1 | 09/15/11 | GK | n/a | n/a | MSE2259 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-1, MC3492-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2480 | 99 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2250 | 90 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2280 | 91 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2460 | 98 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 12500 | 11200 | 90 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 2500 | 1940 | 78 | 76-141 |
| 100-41-4 | Ethylbenzene | 2500 | 2270 | 91 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 3230 | 129 | 70-130 |
| 591-78-6 | 2-Hexanone | 2500 | 1950 | 78 | 70-130 |
| 98-82-8 | Isopropylbenzene | 2500 | 2780 | 111 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2680 | 107 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2230 | 89 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 2020 | 81 | 70-130 |
| 74-95-3 | Methylene bromide | 2500 | 2190 | 88 | 70-130 |
| 75-09-2 | Methylene chloride | 2500 | 2340 | 94 | 70-130 |
| 91-20-3 | Naphthalene | 2500 | 2260 | 90 | 70-130 |
| 103-65-1 | n-Propylbenzene | 2500 | 2530 | 101 | 70-130 |
| 100-42-5 | Styrene | 2500 | 2130 | 85 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2220 | 89 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2080 | 83 | 70-130 |
| 127-18-4 | Tetrachloroethene | 2500 | 2290 | 92 | 70-130 |
| 108-88-3 | Toluene | 2500 | 2310 | 92 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 2660 | 106 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2670 | 107 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2470 | 99 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2090 | 84 | 70-130 |
| 79-01-6 | Trichloroethene | 2500 | 2300 | 92 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2110 | 84 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2070 | 83 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2490 | 100 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2510 | 100 | 70-130 |
| 108-05-4 | Vinyl Acetate | 2500 | 1680 | 67* b | 70-130 |
| 75-01-4 | Vinyl chloride | 2500 | 1720 | 69* b | 70-130 |
| | m,p-Xylene | 5000 | 4640 | 93 | 70-130 |
| 95-47-6 | o-Xylene | 2500 | 2260 | 90 | 70-130 |
| 1330-20-7 | Xylene (total) | 7500 | 6900 | 92 | 70-130 |

# Blank Spike Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSE2259-BS | E55591.D | 1 | 09/15/11 | GK | n/a | n/a | MSE2259 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-1, MC3492-3

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | 70-130% |
| 2037-26-5 | Toluene-D8 | 107% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 105% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits. Blank Spike meets program technical requirements.

# Blank Spike Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1398-BS | M43473.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-2, MC3492-4, MC3492-9

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 61.9 | 124 | 70-130 |
| 107-02-8 | Acrolein | 250 | 195 | 78 | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 226 | 452* [a] | 70-130 |
| 71-43-2 | Benzene | 50 | 51.4 | 103 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 55.8 | 112 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 54.5 | 109 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 57.6 | 115 | 70-130 |
| 75-25-2 | Bromoform | 50 | 52.6 | 105 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 47.5 | 95 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 61.7 | 123 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 60.6 | 121 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 59.6 | 119 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 58.3 | 117 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 46.6 | 93 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 60.7 | 121 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 54.7 | 109 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 47.1 | 94 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 41.1 | 82 | 70-130 |
| 67-66-3 | Chloroform | 50 | 54.5 | 109 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 38.0 | 76 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 54.2 | 108 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 55.9 | 112 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 52.8 | 106 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 60.8 | 122 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 56.0 | 112 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 56.2 | 112 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 55.8 | 112 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 55.4 | 111 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 44.4 | 89 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 52.6 | 105 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 56.2 | 112 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 53.8 | 108 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 52.8 | 106 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 53.9 | 108 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 54.5 | 109 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 53.7 | 107 | 70-130 |

# Blank Spike Summary

Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1398-BS | M43473.D | 1 | 09/2I/11 | TD | n/a | n/a | MSM1398 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-2, MC3492-4, MC3492-9

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 62.6 | 125 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 57.3 | 115 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 52.0 | 104 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 56.4 | 113 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 205 | 82 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 50.3 | 101 | 77-137 |
| 100-41-4 | Ethylbenzene | 50 | 56.4 | 113 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 75.8 | 152* [a] | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 57.7 | 115 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 64.9 | 130 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 61.1 | 122 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 49.8 | 100 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 50.6 | 101 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 55.6 | 111 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 50.8 | 102 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 54.3 | 109 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 56.5 | 113 | 70-130 |
| 100-42-5 | Styrene | 50 | 53.9 | 108 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 59.1 | 118 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 50.4 | 101 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 62.3 | 125 | 70-130 |
| 108-88-3 | Toluene | 50 | 55.9 | 112 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 58.1 | 116 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 61.3 | 123 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 58.3 | 117 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 56.2 | 112 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 56.5 | 113 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 54.0 | 108 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 50.0 | 100 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 54.0 | 108 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 54.3 | 109 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 34.0 | 68* [b] | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 39.3 | 79 | 70-130 |
| | m,p-Xylene | 100 | 117 | 117 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 58.3 | 117 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 176 | 117 | 70-130 |

# Blank Spike Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1398-BS | M43473.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-2, MC3492-4, MC3492-9

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 91% | 70-130% |
| 2037-26-5 | Toluene-D8 | 93% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits. Blank Spike meets program technical requirements.

# Blank Spike Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV86-BS | V1972.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV86 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-5, MC3492-6

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 56.6 | 113 | 70-130 |
| 107-02-8 | Acrolein | 250 | 879 | 352* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 322 | 644* a | 70-130 |
| 71-43-2 | Benzene | 50 | 55.0 | 110 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 47.0 | 94 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 50.3 | 101 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 51.0 | 102 | 70-130 |
| 75-25-2 | Bromoform | 50 | 44.6 | 89 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 48.4 | 97 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 53.9 | 108 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 57.0 | 114 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 51.6 | 103 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 50.1 | 100 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 45.5 | 91 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 48.3 | 97 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 54.7 | 109 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 56.5 | 113 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 49.8 | 100 | 10-160 |
| 67-66-3 | Chloroform | 50 | 53.7 | 107 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 45.0 | 90 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 48.4 | 97 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 49.6 | 99 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 44.1 | 88 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 48.6 | 97 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 49.2 | 98 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 52.6 | 105 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 49.1 | 98 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 48.7 | 97 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 38.4 | 77 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 56.4 | 113 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 52.4 | 105 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 53.2 | 106 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 52.0 | 104 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 52.1 | 104 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 53.0 | 106 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 49.1 | 98 | 70-130 |

# Blank Spike Summary

Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV86-BS | V1972.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV86 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-5, MC3492-6

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 54.4 | 109 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 51.5 | 103 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 53.5 | 107 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 55.7 | 111 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 255 | 102 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 53.7 | 107 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 54.7 | 109 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 51.5 | 103 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 59.3 | 119 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 58.3 | 117 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 54.0 | 108 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 52.6 | 105 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 58.8 | 118 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 51.7 | 103 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 57.0 | 114 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 53.2 | 106 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 51.2 | 102 | 70-130 |
| 100-42-5 | Styrene | 50 | 54.3 | 109 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 51.5 | 103 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 50.6 | 101 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 49.6 | 99 | 70-130 |
| 108-88-3 | Toluene | 50 | 51.7 | 103 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 53.1 | 106 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 55.1 | 110 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 50.9 | 102 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 50.8 | 102 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 50.7 | 101 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 45.2 | 90 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 49.9 | 100 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 49.7 | 99 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 49.5 | 99 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 38.5 | 77 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 41.2 | 82 | 70-130 |
|  | m,p-Xylene | 100 | 111 | 111 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 54.0 | 108 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 164 | 109 | 70-130 |

# Blank Spike Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV86-BS | V1972.D | 1 | 09/21/11 | AMY | n/a | n/a | MSV86 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-5, MC3492-6

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 96% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV91-BS | V2067.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |
| MSV91-BSD | V2068.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-7, MC3492-8

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 107-02-8 | Acrolein | 250 | 742 | 297* a | 787 | 315* a | 6 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 293 | 586* a | 318 | 636* a | 8 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 51.1 | 102 | 55.3 | 111 | 8 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 46.2 | 92 | 50.1 | 100 | 8 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 46.9 | 94 | 51.4 | 103 | 9 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 48.0 | 96 | 51.8 | 104 | 8 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 42.9 | 86 | 47.2 | 94 | 10 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 46.9 | 94 | 52.0 | 104 | 10 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 50.9 | 102 | 58.5 | 117 | 14 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 54.9 | 110 | 58.5 | 117 | 6 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 49.8 | 100 | 53.6 | 107 | 7 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 48.5 | 97 | 52.2 | 104 | 7 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 45.1 | 90 | 47.5 | 95 | 5 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 45.0 | 90 | 48.3 | 97 | 7 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 52.2 | 104 | 56.9 | 114 | 9 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 54.1 | 108 | 60.5 | 121 | 11 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 15.9 | 32 | 17.5 | 35 | 10 | 10-160/25 |
| 67-66-3 | Chloroform | 50 | 49.3 | 99 | 53.3 | 107 | 8 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 46.4 | 93 | 50.2 | 100 | 8 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 47.3 | 95 | 50.9 | 102 | 7 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 48.4 | 97 | 52.0 | 104 | 7 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 43.1 | 86 | 48.8 | 98 | 12 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 46.9 | 94 | 52.0 | 104 | 10 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 47.5 | 95 | 53.0 | 106 | 11 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 50.9 | 102 | 55.5 | 111 | 9 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 48.3 | 97 | 51.6 | 103 | 7 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 47.3 | 95 | 50.9 | 102 | 7 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 42.9 | 86 | 44.2 | 88 | 3 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 52.8 | 106 | 56.7 | 113 | 7 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 49.0 | 98 | 53.5 | 107 | 9 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 49.9 | 100 | 55.6 | 111 | 11 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 48.3 | 97 | 52.2 | 104 | 8 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 48.6 | 97 | 52.8 | 106 | 8 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 50.0 | 100 | 54.0 | 108 | 8 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 47.6 | 95 | 52.2 | 104 | 9 | 70-130/25 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 52.2 | 104 | 55.7 | 111 | 6 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV91-BS | V2067.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |
| MSV91-BSD | V2068.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-7, MC3492-8

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 563-58-6 | 1,1-Dichloropropene | 50 | 47.7 | 95 | 51.7 | 103 | 8 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 50.2 | 100 | 54.6 | 109 | 8 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 51.9 | 104 | 57.4 | 115 | 10 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 253 | 101 | 279 | 112 | 10 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 52.0 | 104 | 54.4 | 109 | 5 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 50 | 51.7 | 103 | 56.7 | 113 | 9 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 48.4 | 97 | 50.3 | 101 | 4 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 70.0 | 140* a | 83.8 | 168* a | 18 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 55.7 | 111 | 61.3 | 123 | 10 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 51.7 | 103 | 55.3 | 111 | 7 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 49.2 | 98 | 53.5 | 107 | 8 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 54.5 | 109 | 62.7 | 125 | 14 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 48.4 | 97 | 53.4 | 107 | 10 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 54.4 | 109 | 59.3 | 119 | 9 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 50.6 | 101 | 55.9 | 112 | 10 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 49.8 | 100 | 53.6 | 107 | 7 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 52.0 | 104 | 56.2 | 112 | 8 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 48.7 | 97 | 53.4 | 107 | 9 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 49.3 | 99 | 56.4 | 113 | 13 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 47.0 | 94 | 51.0 | 102 | 8 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 47.9 | 96 | 51.6 | 103 | 7 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 49.8 | 100 | 52.3 | 105 | 5 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 52.1 | 104 | 54.7 | 109 | 5 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 47.0 | 94 | 49.8 | 100 | 6 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 47.5 | 95 | 52.0 | 104 | 9 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 46.4 | 93 | 50.4 | 101 | 8 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 43.5 | 87 | 47.9 | 96 | 10 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 46.8 | 94 | 53.6 | 107 | 14 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 48.8 | 98 | 51.7 | 103 | 6 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 48.3 | 97 | 51.9 | 104 | 7 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 47.2 | 94 | 39.8 | 80 | 17 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 41.8 | 84 | 44.4 | 89 | 6 | 70-130/25 |
| | m,p-Xylene | 100 | 105 | 105 | 115 | 115 | 9 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 51.3 | 103 | 56.4 | 113 | 9 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 156 | 104 | 171 | 114 | 9 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV91-BS | V2067.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |
| MSV91-BSD | V2068.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-7, MC3492-8

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | 99% | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | 99% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | 98% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV92-BS | V2093A.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |
| MSV92-BSD | V2094A.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-7, MC3492-8

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 42.7 | 85 | 42.4 | 85 | 1 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 639 | 256* a | 597 | 239* a | 7 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 296 | 592* a | 297 | 594* a | 0 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 52.0 | 104 | 52.7 | 105 | 1 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 46.4 | 93 | 47.2 | 94 | 2 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 51.3 | 103 | 51.0 | 102 | 1 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 48.9 | 98 | 49.1 | 98 | 0 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 52.9 | 106 | 53.8 | 108 | 2 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 50.3 | 101 | 50.3 | 101 | 0 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 75.6 | 151* a | 75.8 | 152* a | 0 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 53.6 | 107 | 54.2 | 108 | 1 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 49.0 | 98 | 49.7 | 99 | 1 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 46.4 | 93 | 47.5 | 95 | 2 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 47.3 | 95 | 47.2 | 94 | 0 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 45.1 | 90 | 45.6 | 91 | 1 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 53.0 | 106 | 53.6 | 107 | 1 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 57.4 | 115 | 57.9 | 116 | 1 | 70-130/25 |
| 67-66-3 | Chloroform | 50 | 49.3 | 99 | 49.5 | 99 | 0 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 50.8 | 102 | 50.9 | 102 | 0 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 46.0 | 92 | 46.4 | 93 | 1 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 47.0 | 94 | 47.6 | 95 | 1 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 63.9 | 128 | 65.1 | 130 | 2 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 52.3 | 105 | 52.5 | 105 | 0 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 57.1 | 114 | 57.2 | 114 | 0 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 52.2 | 104 | 52.7 | 105 | 1 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 47.0 | 94 | 47.9 | 96 | 2 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 46.6 | 93 | 47.3 | 95 | 1 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 51.8 | 104 | 51.2 | 102 | 1 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 53.1 | 106 | 53.1 | 106 | 0 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 53.3 | 107 | 53.1 | 106 | 0 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 53.2 | 106 | 53.2 | 106 | 0 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 49.3 | 99 | 49.3 | 99 | 0 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 49.6 | 99 | 50.1 | 100 | 1 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 50.9 | 102 | 51.7 | 103 | 2 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 54.1 | 108 | 54.6 | 109 | 1 | 70-130/25 |
| 594-20-7 | 2,2-Dichloropropane | 50 | 51.7 | 103 | 51.5 | 103 | 0 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Bateh | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV92-BS | V2093A.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |
| MSV92-BSD | V2094A.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-7, MC3492-8

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 563-58-6 | 1,1-Dichloropropene | 50 | 48.8 | 98 | 48.6 | 97 | 0 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 51.3 | 103 | 52.0 | 104 | 1 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 57.0 | 114 | 57.8 | 116 | 1 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 376 | 150* [a] | 350 | 140* [a] | 7 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 65.8 | 132 | 66.1 | 132 | 0 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 50 | 52.4 | 105 | 52.7 | 105 | 1 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 47.7 | 95 | 48.3 | 97 | 1 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 82.0 | 164* [a] | 82.3 | 165* [a] | 0 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 55.0 | 110 | 56.6 | 113 | 3 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 50.8 | 102 | 51.9 | 104 | 2 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 56.5 | 113 | 56.6 | 113 | 0 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 82.9 | 166* [a] | 82.8 | 166* [a] | 0 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 55.6 | 111 | 56.4 | 113 | 1 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 56.4 | 113 | 56.1 | 112 | 1 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 67.4 | 135* [b] | 67.9 | 136* [b] | 1 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 48.8 | 98 | 49.3 | 99 | 1 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 52.5 | 105 | 52.8 | 106 | 1 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 50.0 | 100 | 49.9 | 100 | 0 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 63.7 | 127 | 64.2 | 128 | 1 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 48.7 | 97 | 48.7 | 97 | 0 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 48.0 | 96 | 48.9 | 98 | 2 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 52.8 | 106 | 53.0 | 106 | 0 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 52.1 | 104 | 53.1 | 106 | 2 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 46.9 | 94 | 46.9 | 94 | 0 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 54.2 | 108 | 54.7 | 109 | 1 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 46.7 | 93 | 47.9 | 96 | 3 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 45.4 | 91 | 44.5 | 89 | 2 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 65.1 | 130 | 63.9 | 128 | 2 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 47.0 | 94 | 47.6 | 95 | 1 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 46.9 | 94 | 47.4 | 95 | 1 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 41.5 | 83 | 38.7 | 77 | 7 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 44.4 | 89 | 44.5 | 89 | 0 | 70-130/25 |
| | m,p-Xylene | 100 | 107 | 107 | 107 | 107 | 0 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 52.4 | 105 | 52.3 | 105 | 0 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 159 | 106 | 159 | 106 | 0 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV92-BS | V2093A.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |
| MSV92-BSD | V2094A.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-7, MC3492-8

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | 99% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | 98% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits. Blank Spike meets program technical requirements.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3419-20MS | E55601.D | 1 | 09/15/11 | GK | n/a | n/a | MSE2259 |
| MC3419-20MSD | E55602.D | 1 | 09/15/11 | GK | n/a | n/a | MSE2259 |
| MC3419-20 | E55596.D | 1 | 09/15/11 | GK | n/a | n/a | MSE2259 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-1, MC3492-3

| CAS No. | Compound | MC3419-20 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 2060 | 1800 | 87 | 1690 | 82 | 6 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 10300 | 27300 | 265* [a] | 23800 | 231* [a] | 14 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 2060 | 8900 | 431* [a] | 9300 | 451* [a] | 4 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 2060 | 2110 | 102 | 2040 | 99 | 3 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 2060 | 1970 | 95 | 1950 | 95 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 2060 | 1940 | 94 | 1910 | 93 | 2 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 2060 | 2130 | 103 | 2070 | 100 | 3 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 2060 | 1720 | 83 | 1660 | 80 | 4 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 2060 | 1990 | 96 | 1880 | 91 | 6 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 2060 | 1370 | 66* [b] | 1790 | 87 | 27 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 2060 | 2480 | 120 | 2560 | 124 | 3 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 2060 | 2410 | 117 | 2500 | 121 | 4 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 2060 | 2430 | 118 | 2470 | 120 | 2 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 2060 | 2100 | 102 | 2040 | 99 | 3 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 2060 | 2240 | 109 | 2240 | 109 | 0 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 2060 | 1960 | 95 | 1910 | 93 | 3 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 2060 | 2100 | 102 | 2070 | 100 | 1 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 2060 | 246 | 12 | 617 | 30 | 86* [c] | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 2060 | 2230 | 108 | 2180 | 106 | 2 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 2060 | 1690 | 82 | 1700 | 82 | 1 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 2060 | 2150 | 104 | 2160 | 105 | 0 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 2060 | 2170 | 105 | 2180 | 106 | 0 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 2060 | 1690 | 82 | 2070 | 100 | 20 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 2060 | 1800 | 87 | 1820 | 88 | 1 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 2060 | 1660 | 80 | 1640 | 79 | 1 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 2060 | 1970 | 95 | 1980 | 96 | 1 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 2060 | 2030 | 98 | 2120 | 103 | 4 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 2060 | 2030 | 98 | 2040 | 99 | 0 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 2060 | 1220 | 59* [b] | 1260 | 61* [b] | 3 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | 31.1 | | 2060 | 2270 | 109 | 2190 | 105 | 4 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 2060 | 2020 | 98 | 1970 | 95 | 3 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 2060 | 2190 | 106 | 2150 | 104 | 2 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | 110 | | 2060 | 2150 | 99 | 2240 | 103 | 4 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 2060 | 2120 | 103 | 2050 | 99 | 3 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 2060 | 2050 | 99 | 1940 | 94 | 6 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 2060 | 1710 | 83 | 1670 | 81 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3419-20MS | E55601.D | 1 | 09/15/11 | GK | n/a | n/a | MSE2259 |
| MC3419-20MSD | E55602.D | 1 | 09/15/11 | GK | n/a | n/a | MSE2259 |
| MC3419-20 | E55596.D | 1 | 09/15/11 | GK | n/a | n/a | MSE2259 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-1, MC3492-3

| CAS No. | Compound | MC3419-20 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 2060 | 2350 | 114 | 2310 | 112 | 2 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 2060 | 2150 | 104 | 2070 | 100 | 4 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 2060 | 2020 | 98 | 1970 | 95 | 3 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 2060 | 2190 | 106 | 2100 | 102 | 4 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 10300 | 7500 | 73 | 7850 | 76 | 5 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 2060 | 1560 | 76 | 1670 | 81 | 7 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 2060 | 2110 | 102 | 2080 | 101 | 1 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 2060 | 2790 | 135* [b] | 3140 | 152* [b] | 12 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 2060 | 1630 | 79 | 1660 | 80 | 2 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 2060 | 2610 | 126 | 2630 | 127 | 1 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 2060 | 2540 | 123 | 2610 | 126 | 3 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 2060 | 1860 | 90 | 1910 | 93 | 3 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 2060 | 1590 | 77 | 1600 | 78 | 1 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 2060 | 1820 | 88 | 1880 | 91 | 3 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 2060 | 2080 | 101 | 2010 | 97 | 3 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 2060 | 1450 | 70 | 2020 | 98 | 33* [c] | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 2060 | 2370 | 115 | 2360 | 114 | 0 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 2060 | 1980 | 96 | 1920 | 93 | 3 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 2060 | 1930 | 94 | 1920 | 93 | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 2060 | 1640 | 79 | 1690 | 82 | 3 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | 532 | | 2060 | 2660 | 103 | 2600 | 100 | 2 | 70-130/30 |
| 108-88-3 | Toluene | 25.2 | | 2060 | 2160 | 103 | 2110 | 101 | 2 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 2060 | 1330 | 64* [b] | 2220 | 108 | 50* [c] | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 2060 | 1710 | 83 | 2190 | 106 | 25 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | 49.3 | | 2060 | 2290 | 109 | 2230 | 106 | 3 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 2060 | 1810 | 88 | 1780 | 86 | 2 | 70-130/30 |
| 79-01-6 | Trichloroethene | 111 | | 2060 | 2270 | 105 | 2160 | 99 | 5 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 2060 | 2010 | 97 | 2010 | 97 | 0 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 2060 | 1670 | 81 | 1760 | 85 | 5 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 2060 | 2310 | 112 | 2290 | 111 | 1 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 2060 | 2310 | 112 | 2340 | 113 | 1 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 2060 | 1440 | 70 | 1410 | 68* [b] | 2 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 2060 | 1640 | 79 | 1550 | 75 | 6 | 70-130/30 |
| | m,p-Xylene | ND | | 4130 | 4240 | 103 | 4170 | 101 | 2 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 2060 | 2090 | 101 | 2030 | 98 | 3 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 6190 | 6320 | 102 | 6200 | 100 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3419-20MS | E55601.D | 1 | 09/15/11 | GK | n/a | n/a | MSE2259 |
| MC3419-20MSD | E55602.D | 1 | 09/15/11 | GK | n/a | n/a | MSE2259 |
| MC3419-20 | E55596.D | 1 | 09/15/11 | GK | n/a | n/a | MSE2259 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-1, MC3492-3

| CAS No. | Surrogate Recoveries | MS | MSD | MC3419-20 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | 93% | 97% | 70-130% |
| 2037-26-5 | Toluene-D8 | 111% | 108% | 112% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 110% | 108% | 106% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(c) High RPD due to possible matrix interference and/or sample non-homogeneity.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3557-7MS | M43480.D | 10 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| MC3557-7MSD | M43481.D | 10 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| MC3557-7 | M43482.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| MC3557-7 | M43479.D | 10 | 09/21/11 | TD | n/a | n/a | MSM1398 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-2, MC3492-4, MC3492-9

| CAS No. | Compound | MC3557-7 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 500 | 442 | 88 | 440 | 88 | 0 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 2500 | 4700 | 188* [a] | 4780 | 191* [a] | 2 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 500 | 2360 | 472* [a] | 2260 | 452* [a] | 4 | 70-130/30 |
| 71-43-2 | Benzene | 0.86 | | 500 | 520 | 104 | 501 | 100 | 4 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 500 | 567 | 113 | 568 | 114 | 0 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 500 | 540 | 108 | 534 | 107 | 1 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 500 | 601 | 120 | 573 | 115 | 5 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 500 | 529 | 106 | 525 | 105 | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 500 | 458 | 92 | 448 | 90 | 2 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 500 | 584 | 117 | 566 | 113 | 3 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 500 | 623 | 125 | 598 | 120 | 4 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | 4.6 | | 500 | 620 | 123 | 580 | 115 | 7 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 500 | 604 | 121 | 568 | 114 | 6 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 500 | 462 | 92 | 454 | 91 | 2 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 500 | 621 | 124 | 587 | 117 | 6 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 500 | 558 | 112 | 545 | 109 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 500 | 466 | 93 | 453 | 91 | 3 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 500 | 52.3 | 10* [b] | ND | 0* [b] | 200* [c] | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 500 | 548 | 110 | 531 | 106 | 3 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 500 | 373 | 75 | 364 | 73 | 2 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 500 | 557 | 111 | 539 | 108 | 3 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 500 | 568 | 114 | 560 | 112 | 1 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 500 | 562 | 112 | 526 | 105 | 7 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 500 | 618 | 124 | 599 | 120 | 3 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 500 | 572 | 114 | 568 | 114 | 1 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 500 | 584 | 117 | 570 | 114 | 2 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 500 | 568 | 114 | 555 | 111 | 2 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 500 | 565 | 113 | 549 | 110 | 3 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 500 | 418 | 84 | 385 | 77 | 8 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 500 | 522 | 104 | 509 | 102 | 3 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 500 | 574 | 115 | 544 | 109 | 5 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 500 | 528 | 106 | 524 | 105 | 1 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 500 | 528 | 106 | 522 | 104 | 1 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 500 | 539 | 108 | 535 | 107 | 1 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 500 | 549 | 110 | 544 | 109 | 1 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 500 | 542 | 108 | 533 | 107 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3557-7MS | M43480.D | 10 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| MC3557-7MSD | M43481.D | 10 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| MC3557-7 | M43482.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| MC3557-7 | M43479.D | 10 | 09/21/11 | TD | n/a | n/a | MSM1398 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-2, MC3492-4, MC3492-9

| CAS No. | Compound | MC3557-7 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 500 | 610 | 122 | 578 | 116 | 5 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 500 | 579 | 116 | 553 | 111 | 5 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 500 | 519 | 104 | 512 | 102 | 1 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 500 | 557 | 111 | 560 | 112 | 1 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 2500 | 2120 | 85 | 2200 | 88 | 4 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 500 | 508 | 102 | 519 | 104 | 2 | 72-139/30 |
| 100-41-4 | Ethylbenzene | 117 | | 500 | 669 | 110 | 644 | 105 | 4 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 500 | 765 | 153* [a] | 721 | 144* [a] | 6 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 500 | 516 | 103 | 529 | 106 | 2 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | 10.5 | | 500 | 680 | 134* [b] | 644 | 127 | 5 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | 3.2 | | 500 | 625 | 124 | 595 | 118 | 5 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2.7 | | 500 | 507 | 101 | 504 | 100 | 1 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 500 | 515 | 103 | 506 | 101 | 2 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 500 | 564 | 113 | 545 | 109 | 3 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 500 | 506 | 101 | 510 | 102 | 1 | 70-130/30 |
| 91-20-3 | Naphthalene | 67.3 | | 500 | 632 | 113 | 602 | 107 | 5 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 27.9 | | 500 | 601 | 115 | 580 | 110 | 4 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 500 | 540 | 108 | 541 | 108 | 0 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 500 | 609 | 122 | 573 | 115 | 6 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 500 | 523 | 105 | 512 | 102 | 2 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 500 | 631 | 126 | 602 | 120 | 5 | 70-130/30 |
| 108-88-3 | Toluene | 1.6 | | 500 | 572 | 114 | 557 | 111 | 3 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 500 | 605 | 121 | 570 | 114 | 6 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 500 | 633 | 127 | 598 | 120 | 6 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 500 | 587 | 117 | 560 | 112 | 5 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 500 | 565 | 113 | 568 | 114 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 500 | 578 | 116 | 548 | 110 | 5 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 500 | 535 | 107 | 509 | 102 | 5 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 500 | 512 | 102 | 502 | 100 | 2 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 375 [d] | | 500 | 975 | 120 | 930 | 111 | 5 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 17.9 | | 500 | 577 | 112 | 549 | 106 | 5 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 500 | 346 | 69* [b] | 354 | 71 | 2 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 500 | 389 | 78 | 366 | 73 | 6 | 70-130/30 |
| | m,p-Xylene | 262 | | 1000 | 1390 | 113 | 1350 | 109 | 3 | 70-130/30 |
| 95-47-6 | o-Xylene | 27.5 | | 500 | 624 | 119 | 594 | 113 | 5 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 290 | | 1500 | 2010 | 115 | 1950 | 111 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3557-7MS | M43480.D | 10 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| MC3557-7MSD | M43481.D | 10 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| MC3557-7 | M43482.D | 1 | 09/21/11 | TD | n/a | n/a | MSM1398 |
| MC3557-7 | M43479.D | 10 | 09/21/11 | TD | n/a | n/a | MSM1398 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-2, MC3492-4, MC3492-9

| CAS No. | Surrogate Recoveries | MS | MSD | MC3557-7 | MC3557-7 | Limits |
|---|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 90% | 89% | 89% | 92% | 70-130% |
| 2037-26-5 | Toluene-D8 | 94% | 94% | 96% | 95% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | 97% | 97% | 94% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(c) High RPD due to possible matrix interference and/or sample non-homogeneity.
(d) Result is from Run #2.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3492-6MS | V2010.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV86 |
| MC3492-6MSD | V2011.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV86 |
| MC3492-6 | V1986.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV86 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-5, MC3492-6

| CAS No. | Compound | MC3492-6 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 14.5 | | 57.5 | 88.2 | 128 | 86.8 | 127 | 2 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 288 | 895 | 311* a | 812 | 285* a | 10 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 57.5 | 371 | 645* a | 351 | 615* a | 6 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 57.5 | 61.1 | 106 | 59.4 | 104 | 3 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 57.5 | 54.2 | 94 | 51.2 | 90 | 6 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 57.5 | 58.4 | 101 | 56.7 | 99 | 3 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 57.5 | 57.6 | 100 | 55.2 | 97 | 4 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 57.5 | 58.6 | 102 | 55.7 | 98 | 5 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 57.5 | 58.5 | 102 | 57.7 | 101 | 1 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 57.5 | 92.4 | 161* b | 85.9 | 151* b | 7 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 57.5 | 63.9 | 111 | 59.1 | 104 | 8 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 57.5 | 58.1 | 101 | 55.3 | 97 | 5 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 57.5 | 57.2 | 99 | 53.8 | 94 | 6 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 57.5 | 54.9 | 95 | 53.6 | 94 | 2 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 57.5 | 54.1 | 94 | 52.4 | 92 | 3 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 57.5 | 58.8 | 102 | 56.1 | 98 | 5 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 57.5 | 68.0 | 118 | 66.3 | 116 | 3 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 57.5 | ND | 0* b | ND | 0* b | nc | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 57.5 | 59.6 | 104 | 57.5 | 101 | 4 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 57.5 | 60.7 | 105 | 58.5 | 103 | 4 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 57.5 | 54.9 | 95 | 51.7 | 91 | 6 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 57.5 | 56.2 | 98 | 52.6 | 92 | 7 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 57.5 | 81.2 | 141* b | 76.5 | 134* b | 6 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 57.5 | 58.6 | 102 | 56.1 | 98 | 4 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 57.5 | 64.4 | 112 | 61.3 | 107 | 5 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 57.5 | 59.2 | 103 | 55.1 | 97 | 7 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 57.5 | 54.1 | 94 | 50.6 | 89 | 7 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 57.5 | 53.4 | 93 | 49.9 | 87 | 7 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 57.5 | 60.4 | 105 | 58.3 | 102 | 4 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 57.5 | 63.3 | 110 | 61.9 | 109 | 2 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 57.5 | 66.0 | 115 | 62.0 | 109 | 6 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 57.5 | 62.5 | 109 | 60.6 | 106 | 3 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 57.5 | 57.4 | 100 | 55.7 | 98 | 3 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 57.5 | 58.8 | 102 | 56.7 | 99 | 4 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 57.5 | 59.5 | 103 | 56.9 | 100 | 4 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 57.5 | 61.2 | 106 | 58.4 | 102 | 5 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3492-6MS | V2010.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV86 |
| MC3492-6MSD | V2011.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV86 |
| MC3492-6 | V1986.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV86 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-5, MC3492-6

| CAS No. | Compound | MC3492-6 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 57.5 | 60.4 | 105 | 58.0 | 102 | 4 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 57.5 | 59.0 | 103 | 55.7 | 98 | 6 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 57.5 | 59.4 | 103 | 55.9 | 98 | 6 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 57.5 | 66.3 | 115 | 62.3 | 109 | 6 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 288 | 415 | 144* b | 433 | 152* b | 4 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 57.5 | 75.0 | 130 | 70.2 | 123 | 7 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 3.4 | | 57.5 | 63.3 | 104 | 59.5 | 98 | 6 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 57.5 | 52.0 | 90 | 50.2 | 88 | 4 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 57.5 | 104 | 181* b | 95.4 | 167* b | 9 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 57.5 | 66.9 | 116 | 63.6 | 112 | 5 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 57.5 | 59.9 | 104 | 57.2 | 100 | 5 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 57.5 | 64.5 | 112 | 62.4 | 109 | 3 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 57.5 | 106 | 184* b | 96.3 | 169* b | 10 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 57.5 | 64.8 | 113 | 61.7 | 108 | 5 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 57.5 | 63.4 | 110 | 61.8 | 108 | 3 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 57.5 | 71.2 | 124 | 66.4 | 116 | 7 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 0.85 | J | 57.5 | 59.1 | 101 | 54.9 | 95 | 7 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 57.5 | 58.3 | 101 | 54.6 | 96 | 7 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 57.5 | 55.1 | 96 | 54.1 | 95 | 2 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 57.5 | 76.2 | 132* b | 71.2 | 125 | 7 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 57.5 | 54.5 | 95 | 52.1 | 91 | 5 | 70-130/30 |
| 108-88-3 | Toluene | 7.4 | | 57.5 | 58.4 | 89 | 56.0 | 85 | 4 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 57.5 | 52.5 | 91 | 49.3 | 86 | 6 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 57.5 | 53.7 | 93 | 50.6 | 89 | 6 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 57.5 | 56.4 | 98 | 55.1 | 97 | 2 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 57.5 | 62.3 | 108 | 59.9 | 105 | 4 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 57.5 | 55.1 | 96 | 53.5 | 94 | 3 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 57.5 | 55.7 | 97 | 53.3 | 93 | 4 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 57.5 | 80.1 | 139* b | 70.8 | 124 | 12 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 0.90 | J | 57.5 | 55.9 | 96 | 52.5 | 90 | 6 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 57.5 | 55.7 | 97 | 52.5 | 92 | 6 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 57.5 | 60.0 | 104 | 54.2 | 95 | 10 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 57.5 | 52.6 | 91 | 51.1 | 90 | 3 | 70-130/30 |
| | m,p-Xylene | ND | | 115 | 121 | 105 | 115 | 101 | 5 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 57.5 | 58.4 | 101 | 56.0 | 98 | 4 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 173 | 179 | 104 | 171 | 100 | 5 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3492-6MS | V2010.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV86 |
| MC3492-6MSD | V2011.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV86 |
| MC3492-6 | V1986.D | 1 | 09/22/11 | AMY | n/a | n/a | MSV86 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-5, MC3492-6

| CAS No. | Surrogate Recoveries | MS | MSD | MC3492-6 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 102% | 101% | 78% | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | 97% | 89% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | 98% | 95% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3869-7MS | V2078.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |
| MC3869-7MSD | V2079.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |
| MC3869-7 | V2075.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-7, MC3492-8

| CAS No. | Compound | MC3869-7 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 107-02-8 | Acrolein | ND | | 271 | 1040 | 384* [a] | 1050 | 383* [a] | 1 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 54.1 | 356 | 658* [a] | 357 | 651* [a] | 0 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 54.1 | 59.4 | 110 | 60.0 | 109 | 1 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 54.1 | 54.3 | 100 | 55.1 | 100 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 54.1 | 53.7 | 99 | 53.9 | 98 | 0 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 54.1 | 55.8 | 103 | 55.6 | 101 | 0 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 54.1 | 49.1 | 91 | 49.7 | 91 | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 54.1 | 51.4 | 95 | 52.1 | 95 | 1 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 54.1 | 57.3 | 106 | 60.5 | 110 | 5 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 54.1 | 67.0 | 124 | 66.2 | 121 | 1 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 54.1 | 61.1 | 113 | 61.5 | 112 | 1 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 54.1 | 59.2 | 109 | 60.0 | 109 | 1 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 54.1 | 51.5 | 95 | 51.7 | 94 | 0 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 54.1 | 53.4 | 99 | 54.0 | 98 | 1 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 54.1 | 61.2 | 113 | 61.8 | 113 | 1 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 54.1 | 60.3 | 111 | 61.6 | 112 | 2 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 54.1 | 18.4 | 34 | 19.0 | 35 | 3 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 54.1 | 57.7 | 107 | 58.7 | 107 | 2 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 54.1 | 50.0 | 92 | 50.4 | 92 | 1 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 54.1 | 57.0 | 105 | 57.5 | 105 | 1 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 54.1 | 58.2 | 108 | 58.6 | 107 | 1 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 54.1 | 51.9 | 96 | 52.7 | 96 | 2 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 54.1 | 54.8 | 101 | 55.0 | 100 | 0 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 54.1 | 55.2 | 102 | 55.7 | 102 | 1 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 54.1 | 60.0 | 111 | 59.9 | 109 | 0 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 54.1 | 56.3 | 104 | 56.4 | 103 | 0 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 54.1 | 55.5 | 103 | 55.5 | 101 | 0 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 54.1 | 48.7 | 90 | 48.7 | 89 | 0 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 54.1 | 61.1 | 113 | 62.4 | 114 | 2 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 54.1 | 57.3 | 106 | 56.6 | 103 | 1 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 54.1 | 59.1 | 109 | 59.9 | 109 | 1 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 54.1 | 55.3 | 102 | 56.3 | 103 | 2 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 54.1 | 56.9 | 105 | 57.6 | 105 | 1 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 54.1 | 57.7 | 107 | 57.7 | 105 | 0 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 54.1 | 55.2 | 102 | 55.9 | 102 | 1 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 54.1 | 59.5 | 110 | 61.4 | 112 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3869-7MS | V2078.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |
| MC3869-7MSD | V2079.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |
| MC3869-7 | V2075.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-7, MC3492-8

| CAS No. | Compound | MC3869-7 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 563-58-6 | 1,1-Dichloropropene | ND | | 54.1 | 56.9 | 105 | 57.3 | 105 | 1 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 54.1 | 56.4 | 104 | 57.1 | 104 | 1 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 54.1 | 59.2 | 109 | 59.3 | 108 | 0 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 271 | 270 | 100 | 268 | 98 | 1 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 54.1 | 59.1 | 109 | 59.0 | 108 | 0 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 54.1 | 62.7 | 116 | 63.3 | 115 | 1 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 54.1 | 55.5 | 103 | 55.3 | 101 | 0 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 54.1 | 104 | 192* [a] | 102 | 186* [a] | 2 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 54.1 | 70.3 | 130 | 70.9 | 129 | 1 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 54.1 | 63.2 | 117 | 64.2 | 117 | 2 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 54.1 | 53.6 | 99 | 55.2 | 101 | 3 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 54.1 | 69.3 | 128 | 69.4 | 127 | 0 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 54.1 | 56.4 | 104 | 56.1 | 102 | 1 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 54.1 | 61.4 | 113 | 62.6 | 114 | 2 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 54.1 | 56.5 | 104 | 56.8 | 104 | 1 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 54.1 | 61.4 | 113 | 61.3 | 112 | 0 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 54.1 | 60.0 | 111 | 60.2 | 110 | 0 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 54.1 | 57.1 | 106 | 57.4 | 105 | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 54.1 | 58.6 | 108 | 58.4 | 107 | 0 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 54.1 | 56.3 | 104 | 56.9 | 104 | 1 | 70-130/30 |
| 108-88-3 | Toluene | 0.61 | J | 54.1 | 56.4 | 103 | 56.1 | 101 | 1 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorohenzene | ND | | 54.1 | 52.6 | 97 | 52.1 | 95 | 1 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 54.1 | 55.9 | 103 | 55.8 | 102 | 0 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 54.1 | 55.0 | 102 | 56.1 | 102 | 2 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 54.1 | 54.7 | 101 | 54.7 | 100 | 0 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 54.1 | 56.4 | 104 | 57.6 | 105 | 2 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 54.1 | 50.1 | 93 | 50.7 | 92 | 1 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 54.1 | 59.0 | 109 | 56.7 | 103 | 4 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 54.1 | 58.8 | 109 | 58.9 | 107 | 0 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 54.1 | 58.7 | 108 | 59.3 | 108 | 1 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 54.1 | 42.6 | 79 | 41.5 | 76 | 3 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 54.1 | 43.9 | 81 | 45.1 | 82 | 3 | 70-130/30 |
| | m,p-Xylene | ND | | 108 | 127 | 117 | 128 | 117 | 1 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 54.1 | 60.5 | 112 | 61.8 | 113 | 2 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 162 | 188 | 116 | 189 | 115 | 1 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3869-7MS | V2078.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |
| MC3869-7MSD | V2079.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |
| MC3869-7 | V2075.D | 1 | 09/25/11 | AMY | n/a | n/a | MSV91 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-7, MC3492-8

| CAS No. | Surrogate Recoveries | MS | MSD | MC3869-7 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 97% | 98% | 101% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 97% | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | 98% | 101% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3748-24MS | V2114.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |
| MC3748-24MSD | V2115.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |
| MC3748-24 | V2098.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-7, MC3492-8

| CAS No. | Compound | MC3748-24 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 52.5 | B | 72.4 | 92.8 | 56* [a] | 90.1 | 63* [a] | 3 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 362 | 1670 | 461* [b] | 1350 | 452* [b] | 21 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 72.4 | 377 | 521* [b] | 291 | 487* [b] | 26 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 72.4 | 71.9 | 99 | 65.9 | 110 | 9 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 72.4 | 52.2 | 72 | 67.6 | 113 | 26 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 72.4 | 62.9 | 87 | 58.3 | 98 | 8 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 72.4 | 62.4 | 86 | 57.1 | 96 | 9 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 72.4 | 46.7 | 64* [a] | 44.4 | 74 | 5 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 72.4 | 73.9 | 102 | 65.4 | 109 | 12 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 72.4 | 65.6 | 91 | 55.8 | 93 | 16 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 72.4 | 60.8 | 84 | 80.5 | 135* [a] | 28 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 72.4 | 60.8 | 84 | 78.1 | 131* [a] | 25 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 72.4 | 60.3 | 83 | 77.9 | 130 | 25 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 72.4 | 72.3 | 100 | 64.3 | 108 | 12 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 72.4 | 65.2 | 90 | 57.3 | 96 | 13 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 72.4 | 64.0 | 88 | 66.8 | 112 | 4 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 72.4 | 88.4 | 122 | 79.0 | 132* [a] | 11 | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 72.4 | 68.1 | 94 | 61.9 | 104 | 10 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 72.4 | 77.8 | 107 | 68.7 | 115 | 12 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 72.4 | 56.1 | 77 | 72.6 | 122 | 26 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 72.4 | 56.2 | 78 | 72.9 | 122 | 26 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 72.4 | 43.1 | 60* [a] | 49.0 | 82 | 13 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 72.4 | 56.8 | 78 | 55.9 | 94 | 2 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 72.4 | 58.7 | 81 | 58.3 | 98 | 1 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 72.4 | 45.5 | 63* [a] | 59.3 | 99 | 26 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 72.4 | 48.8 | 67* [a] | 61.6 | 103 | 23 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 72.4 | 46.8 | 65* [a] | 58.9 | 99 | 23 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 72.4 | 76.5 | 106 | 65.4 | 109 | 16 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 72.4 | 74.8 | 103 | 68.2 | 114 | 9 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 72.4 | 65.9 | 91 | 59.4 | 99 | 10 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 72.4 | 78.1 | 108 | 68.6 | 115 | 13 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 72.4 | 66.4 | 92 | 61.0 | 102 | 8 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 72.4 | 71.3 | 98 | 63.2 | 106 | 12 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 72.4 | 67.6 | 93 | 62.3 | 104 | 8 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 72.4 | 60.6 | 84 | 60.2 | 101 | 1 | 70-130/30 |
| 594-20-7 | 2,2-Dichloropropane | ND | | 72.4 | 71.2 | 98 | 64.3 | 108 | 10 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3748-24MS | V2114.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |
| MC3748-24MSD | V2115.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |
| MC3748-24 | V2098.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-7, MC3492-8

| CAS No. | Compound | MC3748-24 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 563-58-6 | 1,1-Dichloropropene | ND | | 72.4 | 70.0 | 97 | 62.5 | 105 | 11 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 72.4 | 62.9 | 87 | 56.3 | 94 | 11 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 72.4 | 62.8 | 87 | 55.8 | 93 | 12 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 362 | 306 | 85 | 277 | 93 | 10 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 72.4 | 54.6 | 75 | 37.0 | 62 | 38* [c] | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 72.4 | 67.7 | 93 | 70.5 | 118 | 4 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 72.4 | 48.4 | 67* [a] | 55.5 | 93 | 14 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 72.4 | 65.7 | 91 | 61.4 | 103 | 7 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 72.4 | 74.3 | 103 | 96.3 | 161* [a] | 26 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 72.4 | 61.6 | 85 | 78.9 | 132* [a] | 25 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 72.4 | 63.7 | 88 | 57.8 | 97 | 10 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 72.4 | 70.5 | 97 | 60.5 | 101 | 15 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 72.4 | 62.7 | 87 | 57.2 | 96 | 9 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 72.4 | 78.3 | 108 | 72.9 | 122 | 7 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 72.4 | 25.6 | 35* [a] | 29.3 | 49* [a] | 13 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 72.4 | 63.0 | 87 | 81.5 | 136* [a] | 26 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 72.4 | 55.9 | 77 | 53.3 | 89 | 5 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 72.4 | 59.7 | 82 | 61.7 | 103 | 3 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 72.4 | 56.1 | 77 | 70.9 | 119 | 23 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 72.4 | 64.9 | 90 | 65.0 | 109 | 0 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 72.4 | 65.3 | 90 | 59.7 | 100 | 9 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 72.4 | 26.4 | 36* [a] | 28.4 | 48* [a] | 7 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 72.4 | 32.5 | 45* [a] | 35.7 | 60* [a] | 9 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 72.4 | 66.3 | 92 | 59.5 | 100 | 11 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 72.4 | 60.3 | 83 | 54.0 | 90 | 11 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 72.4 | 65.3 | 90 | 59.6 | 100 | 9 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 72.4 | 68.2 | 94 | 59.2 | 99 | 14 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 72.4 | 56.6 | 78 | 66.0 | 110 | 15 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 72.4 | 56.7 | 78 | 72.6 | 122 | 25 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 72.4 | 58.6 | 81 | 75.2 | 126 | 25 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 72.4 | 70.3 | 97 | 55.9 | 94 | 23 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 72.4 | 68.0 | 94 | 60.3 | 101 | 12 | 70-130/30 |
| | m,p-Xylene | ND | | 145 | 134 | 93 | 140 | 117 | 4 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 72.4 | 63.2 | 87 | 66.1 | 111 | 4 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 217 | 197 | 91 | 206 | 115 | 4 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3748-24MS | V2114.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |
| MC3748-24MSD | V2115.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |
| MC3748-24 | V2098.D | 1 | 09/26/11 | AMY | n/a | n/a | MSV92 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3492-7, MC3492-8

| CAS No. | Surrogate Recoveries | MS | MSD | MC3748-24 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | 95% | 98% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 95% | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | 112% | 102% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.
(c) High RPD due to possible matrix interference and/or sample non-homogeneity.

# Volatile Internal Standard Area Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSE2259-CC2241 | Injection Date: | 09/15/11 |
| Lab File ID: | E55590.D | Injection Time: | 10:13 |
| Instrument ID: | GCMSE | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 387144 | 9.11 | 577715 | 9.99 | 267665 | 13.25 | 231737 | 15.81 | 62673 | 6.63 |
| Upper Limit [a] | 774288 | 9.61 | 1155430 | 10.49 | 535330 | 13.75 | 463474 | 16.31 | 125346 | 7.13 |
| Lower Limit [b] | 193572 | 8.61 | 288858 | 9.49 | 133833 | 12.75 | 115869 | 15.31 | 31337 | 6.13 |
| Lab Sample ID | 1S 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSE2259-BS | 365232 | 9.12 | 550177 | 9.99 | 254231 | 13.25 | 225560 | 15.81 | 52899 | 6.63 |
| MSE2259-MB | 357758 | 9.11 | 528199 | 9.99 | 232121 | 13.25 | 218422 | 15.81 | 53213 | 6.63 |
| ZZZZZZ | 371773 | 9.11 | 553772 | 9.99 | 246503 | 13.25 | 216081 | 15.81 | 49807 | 6.63 |
| MC3419-20 | 352852 | 9.11 | 529218 | 9.99 | 234655 | 13.25 | 216897 | 15.81 | 51596 | 6.63 |
| ZZZZZZ | 361503 | 9.12 | 531322 | 9.99 | 236077 | 13.26 | 221346 | 15.81 | 59180 | 6.64 |
| MC3492-1 | 378479 | 9.11 | 564016 | 9.99 | 258523 | 13.25 | 239908 | 15.81 | 49892 | 6.63 |
| MC3492-3 | 355979 | 9.12 | 537046 | 9.99 | 244287 | 13.25 | 233090 | 15.81 | 45944 | 6.64 |
| ZZZZZZ | 331928 | 9.11 | 500907 | 9.99 | 221932 | 13.25 | 220982 | 15.81 | 43634 | 6.63 |
| MC3419-20MS | 318547 | 9.12 | 487600 | 9.99 | 225649 | 13.26 | 198057 | 15.81 | 45492 | 6.64 |
| MC3419-20MSD | 314073 | 9.11 | 480249 | 9.99 | 219017 | 13.25 | 189358 | 15.81 | 45202 | 6.64 |

1S 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSE2261-CC2241 | Injection Date: | 09/22/11 |
| Lab File ID: | E55697.D | Injection Time: | 10:19 |
| Instrument ID: | GCMSE | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 350850 | 9.10 | 540303 | 9.98 | 256793 | 13.24 | 222349 | 15.79 | 52812 | 6.62 |
| Upper Limit [a] | 701700 | 9.60 | 1080606 | 10.48 | 513586 | 13.74 | 444698 | 16.29 | 105624 | 7.12 |
| Lower Limit [b] | 175425 | 8.60 | 270152 | 9.48 | 128397 | 12.74 | 111175 | 15.29 | 26406 | 6.12 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSE2261-BS | 334609 | 9.09 | 509979 | 9.97 | 243254 | 13.24 | 217157 | 15.79 | 47725 | 6.61 |
| MSE2261-MB | 342495 | 9.09 | 522270 | 9.97 | 241059 | 13.23 | 218663 | 15.80 | 54815 | 6.62 |
| ZZZZZZ | 331466 | 9.09 | 504668 | 9.97 | 228429 | 13.24 | 222710 | 15.79 | 50920 | 6.62 |
| ZZZZZZ | 338302 | 9.10 | 514281 | 9.98 | 238738 | 13.24 | 223972 | 15.79 | 44719 | 6.62 |
| MC3492-6 [c] | 340218 | 9.09 | 516192 | 9.97 | 233865 | 13.24 | 221080 | 15.80 | 44118 | 6.62 |
| ZZZZZZ | 342121 | 9.10 | 516172 | 9.98 | 233128 | 13.25 | 224310 | 15.80 | 46205 | 6.63 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Confirmation run.

# Volatile Internal Standard Area Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1398-CC1370 | Injection Date: | 09/21/11 |
| Lab File ID: | M43472.D | Injection Time: | 10:30 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 104667 | 9.19 | 158648 | 10.07 | 78940 | 13.34 | 100533 | 15.90 | 28304 | 6.74 |
| Upper Limit [a] | 209334 | 9.69 | 317296 | 10.57 | 157880 | 13.84 | 201066 | 16.40 | 56608 | 7.24 |
| Lower Limit [b] | 52334 | 8.69 | 79324 | 9.57 | 39470 | 12.84 | 50267 | 15.40 | 14152 | 6.24 |
| Lab SampIe ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1393-BS2 | 115718 | 9.19 | 175505 | 10.07 | 84995 | 13.34 | 103850 | 15.90 | 35691 | 6.74 |
| MSM1398-BS | 115718 | 9.19 | 175505 | 10.07 | 84995 | 13.34 | 103850 | 15.90 | 35691 | 6.74 |
| MSM1393-BSD2 | 117397 | 9.19 | 177098 | 10.07 | 86609 | 13.33 | 106062 | 15.90 | 35636 | 6.75 |
| MSM1393-MB2 | 103428 | 9.19 | 154589 | 10.07 | 75072 | 13.34 | 86683 | 15.90 | 31945 | 6.74 |
| MSM1398-MB | 103428 | 9.19 | 154589 | 10.07 | 75072 | 13.34 | 86683 | 15.90 | 31945 | 6.74 |
| ZZZZZZ | 106692 | 9.19 | 161650 | 10.07 | 76373 | 13.34 | 91522 | 15.90 | 35426 | 6.74 |
| ZZZZZZ | 103321 | 9.19 | 156121 | 10.07 | 73766 | 13.34 | 90358 | 15.90 | 32965 | 6.74 |
| MC3557-7 | 104887 | 9.19 | 153361 | 10.07 | 72257 | 13.34 | 89736 | 15.90 | 33367 | 6.74 |
| MC3557-7MS | 113801 | 9.19 | 170358 | 10.07 | 82052 | 13.34 | 100698 | 15.90 | 35152 | 6.74 |
| MC3557-7MSD | 121159 | 9.19 | 182463 | 10.07 | 89544 | 13.33 | 108692 | 15.90 | 36189 | 6.75 |
| MC3557-7 | 119967 | 9.19 | 179945 | 10.07 | 84482 | 13.34 | 110034 | 15.90 | 37927 | 6.74 |
| ZZZZZZ | 128966 | 9.19 | 191334 | 10.07 | 89593 | 13.34 | 110759 | 15.90 | 38318 | 6.74 |
| ZZZZZZ | 128332 | 9.19 | 189957 | 10.07 | 88510 | 13.34 | 110737 | 15.90 | 39646 | 6.74 |
| MC3492-4 | 123995 | 9.19 | 184845 | 10.07 | 83166 | 13.34 | 101979 | 15.90 | 38055 | 6.74 |
| MC3492-9 | 116932 | 9.19 | 172141 | 10.07 | 81450 | 13.34 | 97631 | 15.90 | 35254 | 6.74 |
| MC3492-2 | 111796 | 9.19 | 165136 | 10.07 | 77179 | 13.34 | 93210 | 15.90 | 35444 | 6.73 |
| ZZZZZZ | 113808 | 9.19 | 168439 | 10.07 | 77410 | 13.34 | 92142 | 15.90 | 35571 | 6.74 |
| ZZZZZZ | 108211 | 9.19 | 162614 | 10.07 | 74720 | 13.34 | 90181 | 15.90 | 33689 | 6.74 |
| ZZZZZZ | 104721 | 9.19 | 154829 | 10.07 | 74733 | 13.34 | 89662 | 15.90 | 34162 | 6.74 |
| ZZZZZZ | 107186 | 9.19 | 157610 | 10.07 | 71316 | 13.34 | 88425 | 15.90 | 32156 | 6.74 |
| ZZZZZZ | 104920 | 9.19 | 154642 | 10.07 | 75107 | 13.34 | 89088 | 15.90 | 32428 | 6.74 |
| ZZZZZZ | 103853 | 9.19 | 155215 | 10.07 | 71374 | 13.34 | 85731 | 15.90 | 30864 | 6.74 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV86-CC67 | Injection Date: | 09/21/11 |
| Lab File ID: | V1971.D | Injection Time: | 18:45 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 358767 | 6.52 | 546101 | 7.71 | 305044 | 11.07 | 315611 | 13.30 | 105736 | 3.49 |
| Upper Limit [a] | 717534 | 7.02 | 1092202 | 8.21 | 610088 | 11.57 | 631222 | 13.80 | 211472 | 3.99 |
| Lower Limit [b] | 179384 | 6.02 | 273051 | 7.21 | 152522 | 10.57 | 157806 | 12.80 | 52868 | 2.99 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSV86-BS | 371272 | 6.52 | 565307 | 7.71 | 312070 | 11.07 | 325022 | 13.30 | 112693 | 3.49 |
| MSV86-MB | 352143 | 6.52 | 552210 | 7.71 | 301973 | 11.07 | 310930 | 13.30 | 95370 | 3.49 |
| ZZZZZZ | 343129 | 6.51 | 542571 | 7.70 | 306548 | 11.07 | 315259 | 13.30 | 137844 | 3.47 |
| ZZZZZZ | 338178 | 6.52 | 532050 | 7.71 | 300612 | 11.07 | 307360 | 13.30 | 99334 | 3.48 |
| ZZZZZZ | 325132 | 6.52 | 507522 | 7.71 | 280443 | 11.07 | 274585 | 13.30 | 76389 | 3.48 |
| ZZZZZZ | 320595 | 6.52 | 507511 | 7.71 | 279192 | 11.07 | 274774 | 13.30 | 80268 | 3.49 |
| ZZZZZZ | 326372 | 6.51 | 512611 | 7.71 | 286615 | 11.07 | 289701 | 13.30 | 92502 | 3.48 |
| ZZZZZZ | 343717 | 6.51 | 537584 | 7.71 | 286911 | 11.07 | 244148 | 13.30 | 85802 | 3.48 |
| ZZZZZZ | 304810 | 6.51 | 479518 | 7.71 | 266192 | 11.07 | 258304 | 13.30 | 73170 | 3.48 |
| ZZZZZZ | 306444 | 6.52 | 487168 | 7.71 | 267951 | 11.07 | 249941 | 13.30 | 88741 | 3.49 |
| ZZZZZZ | 309401 | 6.52 | 487791 | 7.71 | 268918 | 11.07 | 245613 | 13.30 | 97501 | 3.49 |
| ZZZZZZ | 304560 | 6.51 | 483493 | 7.71 | 268743 | 11.07 | 249927 | 13.31 | 70626 | 3.48 |
| ZZZZZZ | 318272 | 6.52 | 500535 | 7.71 | 284098 | 11.07 | 282627 | 13.31 | 68869 | 3.48 |
| MC3492-5 | 189930 | 6.52 | 296451 | 7.71 | 172010 | 11.07 | 172556 | 13.31 | 100705 | 3.49 |
| MC3492-6 | 186605 | 6.51 | 281439 | 7.71 | 153287 | 11.07 | 137069[c] | 13.31 | 26988[c] | 3.46 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Volatile Internal Standard Area Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV87-CC67 | Injection Date: | 09/22/11 |
| Lab File ID: | V1989.D | Injection Time: | 09:16 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 350785 | 6.52 | 525385 | 7.71 | 286483 | 11.07 | 293627 | 13.30 | 107422 | 3.49 |
| Upper Limit [a] | 701570 | 7.02 | 1050770 | 8.21 | 572966 | 11.57 | 587254 | 13.80 | 214844 | 3.99 |
| Lower Limit [b] | 175393 | 6.02 | 262693 | 7.21 | 143242 | 10.57 | 146814 | 12.80 | 53711 | 2.99 |
| **Lab Sample ID** | **IS 1 AREA** | **RT** | **IS 2 AREA** | **RT** | **IS 3 AREA** | **RT** | **IS 4 AREA** | **RT** | **IS 5 AREA** | **RT** |
| MSV87-BS | 370652 | 6.52 | 555745 | 7.72 | 298842 | 11.07 | 300221 | 13.30 | 102208 | 3.50 |
| MSV86-BS1 | 370652 | 6.52 | 555745 | 7.72 | 298842 | 11.07 | 300221 | 13.30 | 102208 | 3.50 |
| MSV86-MB1 | 341641 | 6.52 | 531634 | 7.71 | 281828 | 11.07 | 282447 | 13.30 | 95498 | 3.49 |
| MSV87-MB | 341641 | 6.52 | 531634 | 7.71 | 281828 | 11.07 | 282447 | 13.30 | 95498 | 3.49 |
| ZZZZZZ | 311583 | 6.53 | 487609 | 7.72 | 261675 | 11.07 | 231852 | 13.30 | 156890 | 3.49 |
| ZZZZZZ | 319246 | 6.52 | 496837 | 7.71 | 272589 | 11.07 | 277491 | 13.30 | 164518 | 3.50 |
| ZZZZZZ | 156824[c] | 6.52 | 231049[c] | 7.72 | 95288[c] | 11.07 | 51274[c] | 13.30 | 80505 | 3.49 |
| ZZZZZZ | 343107 | 6.53 | 504762 | 7.72 | 274591 | 11.07 | 240147 | 13.30 | 145295 | 3.50 |
| MC3762-3 | 326380 | 6.53 | 503124 | 7.72 | 263762 | 11.07 | 244470 | 13.31 | 85199 | 3.49 |
| ZZZZZZ | 332240 | 6.52 | 507298 | 7.71 | 270916 | 11.07 | 257490 | 13.31 | 92189 | 3.49 |
| ZZZZZZ | 333367 | 6.53 | 516097 | 7.72 | 278564 | 11.07 | 272720 | 13.31 | 90029 | 3.50 |
| ZZZZZZ | 293668 | 6.52 | 465641 | 7.71 | 249106 | 11.07 | 237681 | 13.31 | 91459 | 3.48 |
| ZZZZZZ | 330759 | 6.52 | 507670 | 7.71 | 273405 | 11.07 | 273520 | 13.31 | 110633 | 3.49 |
| ZZZZZZ | 317974 | 6.53 | 493929 | 7.72 | 264937 | 11.07 | 256556 | 13.31 | 91987 | 3.49 |
| ZZZZZZ | 280663 | 6.53 | 442554 | 7.72 | 231297 | 11.07 | 198979 | 13.31 | 95084 | 3.50 |
| ZZZZZZ | 313198 | 6.53 | 481722 | 7.72 | 256745 | 11.07 | 242074 | 13.31 | 90547 | 3.50 |
| ZZZZZZ | 310402 | 6.53 | 485760 | 7.72 | 263145 | 11.07 | 259102 | 13.31 | 89938 | 3.50 |
| ZZZZZZ | 325975 | 6.53 | 499785 | 7.72 | 272503 | 11.07 | 272734 | 13.31 | 103185 | 3.51 |
| ZZZZZZ | 308196 | 6.53 | 483901 | 7.72 | 257923 | 11.07 | 242672 | 13.31 | 89372 | 3.49 |
| ZZZZZZ | 314190 | 6.53 | 494906 | 7.72 | 268847 | 11.07 | 263972 | 13.31 | 97885 | 3.50 |
| MC3762-3MS | 333861 | 6.53 | 503999 | 7.72 | 265065 | 11.07 | 254574 | 13.31 | 96081 | 3.50 |
| MC3762-3MSD | 336218 | 6.53 | 506172 | 7.72 | 268940 | 11.07 | 262217 | 13.31 | 102149 | 3.50 |
| MC3492-6MS | 335420 | 6.53 | 512030 | 7.72 | 279333 | 11.07 | 276141 | 13.31 | 152971 | 3.50 |
| MC3492-6MSD | 354401 | 6.52 | 542941 | 7.72 | 294782 | 11.07 | 292820 | 13.31 | 158485 | 3.49 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Volatile Internal Standard Area Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV91-CC67 | Injection Date: | 09/25/11 |
| Lab File ID: | V2066.D | Injection Time: | 07:34 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 389055 | 6.53 | 586023 | 7.72 | 311169 | 11.07 | 309326 | 13.31 | 108162 | 3.50 |
| Upper Limit [a] | 778110 | 7.03 | 1172046 | 8.22 | 622338 | 11.57 | 618652 | 13.81 | 216324 | 4.00 |
| Lower Limit [b] | 194528 | 6.03 | 293012 | 7.22 | 155585 | 10.57 | 154663 | 12.81 | 54081 | 3.00 |
| **Lab Sample ID** | **IS 1 AREA** | **RT** | **IS 2 AREA** | **RT** | **IS 3 AREA** | **RT** | **IS 4 AREA** | **RT** | **IS 5 AREA** | **RT** |
| MSV91-BS | 409585 | 6.53 | 621132 | 7.72 | 329842 | 11.07 | 333036 | 13.31 | 121666 | 3.50 |
| MSV91-BSD | 385156 | 6.53 | 579676 | 7.72 | 306512 | 11.07 | 308658 | 13.31 | 121230 | 3.50 |
| MSV91-MB | 367560 | 6.53 | 569858 | 7.72 | 302294 | 11.07 | 302582 | 13.31 | 106994 | 3.49 |
| MC3492-7 | 372927 | 6.53 | 576768 | 7.72 | 313585 | 11.07 | 314848 | 13.31 | 168406 | 3.49 |
| MC3492-8 | 48346[c] | 6.53 | 76339[c] | 7.72 | 42835[c] | 11.07 | 41312[c] | 13.31 | 29985[c] | 3.47 |
| ZZZZZZ | 347254 | 6.53 | 543992 | 7.72 | 286838 | 11.07 | 281639 | 13.31 | 95557 | 3.49 |
| ZZZZZZ | 341398 | 6.53 | 536479 | 7.72 | 282125 | 11.07 | 274814 | 13.31 | 88331 | 3.50 |
| MC3869-7 | 330028 | 6.53 | 519990 | 7.72 | 273838 | 11.07 | 258034 | 13.31 | 102981 | 3.49 |
| ZZZZZZ | 316253 | 6.53 | 500061 | 7.72 | 249554 | 11.07 | 220632 | 13.31 | 80440 | 3.49 |
| ZZZZZZ | 340346 | 6.53 | 534828 | 7.72 | 284339 | 11.07 | 285338 | 13.31 | 97756 | 3.50 |
| MC3869-7MS | 367732 | 6.53 | 551996 | 7.72 | 288479 | 11.07 | 282491 | 13.31 | 105146 | 3.50 |
| MC3869-7MSD | 370699 | 6.53 | 563500 | 7.72 | 292894 | 11.07 | 286663 | 13.31 | 107986 | 3.50 |
| ZZZZZZ | 363188 | 6.53 | 562664 | 7.72 | 295146 | 11.07 | 291643 | 13.31 | 107412 | 3.50 |
| ZZZZZZ | 345308 | 6.53 | 543146 | 7.72 | 286186 | 11.08 | 276440 | 13.31 | 96087 | 3.51 |
| ZZZZZZ | 345671 | 6.53 | 539297 | 7.72 | 287341 | 11.07 | 276986 | 13.31 | 97765 | 3.49 |
| ZZZZZZ | 328678 | 6.53 | 517038 | 7.72 | 270982 | 11.08 | 266966 | 13.31 | 84238 | 3.50 |
| ZZZZZZ | 320718 | 6.54 | 511827 | 7.72 | 268653 | 11.08 | 249711 | 13.31 | 87373 | 3.50 |
| ZZZZZZ | 298452 | 6.53 | 469088 | 7.72 | 248443 | 11.08 | 242854 | 13.31 | 87777 | 3.50 |
| ZZZZZZ | 172907[c] | 6.53 | 274498[c] | 7.72 | 141319[c] | 11.08 | 117515[c] | 13.31 | 45051[c] | 3.49 |
| ZZZZZZ | 243725 | 6.53 | 378198 | 7.72 | 200471 | 11.07 | 195934 | 13.31 | 61204 | 3.49 |
| ZZZZZZ | 175286[c] | 6.53 | 271866[c] | 7.72 | 129242[c] | 11.08 | 87732[c] | 13.31 | 39150[c] | 3.49 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Volatile Internal Standard Area Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV90-CC65 | Injection Date: | 09/26/11 |
| Lab File ID: | V2092.D | Injection Time: | 07:46 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 413681 | 6.53 | 626365 | 7.72 | 328244 | 11.08 | 329627 | 13.31 | 106730 | 3.49 |
| Upper Limit [a] | 827362 | 7.03 | 1252730 | 8.22 | 656488 | 11.58 | 659254 | 13.81 | 213460 | 3.99 |
| Lower Limit [b] | 206841 | 6.03 | 313183 | 7.22 | 164122 | 10.58 | 164814 | 12.81 | 53365 | 2.99 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSV92-BS | 401019 | 6.53 | 604002 | 7.72 | 320009 | 11.08 | 333099 | 13.31 | 185580 | 3.50 |
| MSV92-BSD | 405700 | 6.53 | 607351 | 7.72 | 323587 | 11.07 | 332820 | 13.31 | 180740 | 3.49 |
| MSV92-MB | 381451 | 6.54 | 582838 | 7.72 | 305379 | 11.08 | 311683 | 13.31 | 106176 | 3.50 |
| ZZZZZZ | 374588 | 6.54 | 578799 | 7.73 | 307832 | 11.08 | 311651 | 13.31 | 115587 | 3.51 |
| MC3748-24 | 385501 | 6.54 | 590556 | 7.73 | 301685 | 11.08 | 285940 | 13.31 | 90377 | 3.50 |
| ZZZZZZ | 40817[c] | 6.53 | 60722[c] | 7.72 | 33295[c] | 11.08 | 25302[c] | 13.31 | 12192[c] | 3.47 |
| ZZZZZZ | 212755 | 6.53 | 327071 | 7.72 | 151507[c] | 11.08 | 103177[c] | 13.31 | 48714[c] | 3.49 |
| MC3492-7 | 335390 | 6.53 | 524390 | 7.72 | 284301 | 11.08 | 278064 | 13.31 | 138545 | 3.49 |
| MC3492-8 | 344653 | 6.53 | 539605 | 7.72 | 291723 | 11.08 | 288127 | 13.31 | 167638 | 3.50 |
| ZZZZZZ | 347218 | 6.54 | 542524 | 7.73 | 284194 | 11.08 | 275224 | 13.31 | 92220 | 3.51 |
| ZZZZZZ | 287859 | 6.54 | 443068 | 7.73 | 207362 | 11.08 | 155111[c] | 13.31 | 50523[c] | 3.50 |
| ZZZZZZ | 171671[c] | 6.54 | 271133[c] | 7.73 | 130539[c] | 11.08 | 102604[c] | 13.31 | 48665[c] | 3.49 |
| ZZZZZZ | 156699[c] | 6.54 | 244878[c] | 7.73 | 129904[c] | 11.08 | 119640[c] | 13.31 | 38584[c] | 3.49 |
| ZZZZZZ | 0[c] | 0.00* | 0[c] | 0.00* | 0[c] | 0.00* | 0[c] | 0.00* | 0[c] | 0.00* |
| ZZZZZZ | 356149 | 6.54 | 558882 | 7.73 | 293092 | 11.08 | 283013 | 13.31 | 87188 | 3.50 |
| ZZZZZZ | 335048 | 6.54 | 537515 | 7.73 | 267004 | 11.08 | 207487 | 13.31 | 95711 | 3.51 |
| ZZZZZZ | 330553 | 6.54 | 521248 | 7.73 | 260593 | 11.08 | 211845 | 13.31 | 90243 | 3.50 |
| ZZZZZZ | 342051 | 6.54 | 537121 | 7.73 | 287386 | 11.08 | 281260 | 13.31 | 88856 | 3.50 |
| MC3748-24MS | 384723 | 6.54 | 574942 | 7.73 | 304533 | 11.08 | 300670 | 13.31 | 109023 | 3.50 |
| MC3748-24MSD | 368779 | 6.54 | 547678 | 7.73 | 263199 | 11.08 | 202221 | 13.31 | 79537 | 3.51 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Volatile Surrogate Recovery Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3492-2 | M43489.D | 91.0 | 94.0 | 95.0 |
| MC3492-4 | M43486.D | 91.0 | 93.0 | 95.0 |
| MC3492-9 | M43487.D | 90.0 | 95.0 | 97.0 |
| MC3557-7MS | M43480.D | 90.0 | 94.0 | 96.0 |
| MC3557-7MSD | M43481.D | 89.0 | 94.0 | 97.0 |
| MSM1398-BS | M43473.D | 91.0 | 93.0 | 96.0 |
| MSM1398-MB | M43476.D | 94.0 | 96.0 | 99.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

5.6.1

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# Volatile Surrogate Recovery Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3492-1 | E55598.D | 98.0 | 113.0 | 108.0 |
| MC3492-3 | E55599.D | 98.0 | 113.0 | 109.0 |
| MC3492-5 | V1985.D | 87.0 | 96.0 | 96.0 |
| MC3492-6 | E55703.D | 95.0 | 108.0 | 98.0 |
| MC3492-6 | V1986.D | 78.0 | 89.0 | 95.0 |
| MC3492-7 | V2102.D | 97.0 | 98.0 | 97.0 |
| MC3492-7 | V2071.D | 97.0 | 97.0 | 96.0 |
| MC3492-8 | V2103.D | 99.0 | 98.0 | 97.0 |
| MC3492-8 | V2072.D | 101.0 | 89.0 | 84.0 |
| MC3419-20MS | E55601.D | 98.0 | 111.0 | 110.0 |
| MC3419-20MSD | E55602.D | 93.0 | 108.0 | 108.0 |
| MC3492-6MS | V2010.D | 102.0 | 99.0 | 98.0 |
| MC3492-6MSD | V2011.D | 101.0 | 97.0 | 98.0 |
| MC3748-24MS | V2114.D | 98.0 | 98.0 | 98.0 |
| MC3748-24MSD | V2115.D | 95.0 | 95.0 | 112.0 |
| MC3869-7MS | V2078.D | 97.0 | 97.0 | 99.0 |
| MC3869-7MSD | V2079.D | 98.0 | 97.0 | 98.0 |
| MSE2259-BS | E55591.D | 94.0 | 107.0 | 105.0 |
| MSE2259-MB | E55594.D | 98.0 | 111.0 | 104.0 |
| MSV86-BS | V1972.D | 96.0 | 98.0 | 98.0 |
| MSV86-MB | V1973.D | 93.0 | 94.0 | 96.0 |
| MSV91-BS | V2067.D | 100.0 | 99.0 | 98.0 |
| MSV91-BSD | V2068.D | 99.0 | 99.0 | 98.0 |
| MSV91-MB | V2069.D | 98.0 | 97.0 | 96.0 |
| MSV92-BS | V2093A.D | 99.0 | 98.0 | 96.0 |
| MSV92-BSD | V2094A.D | 99.0 | 98.0 | 98.0 |
| MSV92-MB | V2095A.D | 96.0 | 97.0 | 95.0 |
| MSV86-MB1 | V1991.D | 98.0 | 95.0 | 95.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

New England ACCUTEST LABORATORIES

## GC Volatiles

6

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1318-MB | BH23984.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1318 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3492-1, MC3492-3, MC3492-5, MC3492-6, MC3492-7, MC3492-8

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 85% | 36-148% |

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH13I7-MB | BH23984A.DI | | 09/20/11 | WS | n/a | n/a | GBH13I7 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3492-2

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 0.10 | mg/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 85% | 60-126% |

# Blank Spike Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1318-BSP | BH23985.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1318 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3492-1, MC3492-3, MC3492-5, MC3492-6, MC3492-7, MC3492-8

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 16.4 | 82 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 87% | 36-148% |

# Blank Spike Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1317-BSP | BH23985A.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1317 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3492-2

| CAS No. | Compound | Spike mg/l | BSP mg/l | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 0.4 | 0.329 | 82 | 68-134 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 87% | 60-126% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3471-1MS | BH23986.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1317 |
| MC3471-1MSD | BH23987.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1317 |
| MC3471-1 | BH23988.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1317 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3492-2

| CAS No. | Compound | MC3471-1 mg/l | Q | Spike mg/l | MS mg/l | MS % | MSD mg/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 0.4 | 0.400 | 100 | 0.351 | 88 | 13 | 72-131/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3471-1 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 89% | 88% | 87% | 60-126% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3492-6MS | BH23995.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1318 |
| MC3492-6MSD | BH23996.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1318 |
| MC3492-6 | BH23997.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1318 |



The QC reported here applies to the following samples: Method: SW846 8015

MC3492-1, MC3492-3, MC3492-5, MC3492-6, MC3492-7, MC3492-8

| CAS No. | Compound | MC3492-6 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 54.9 | 45.9 | 84 | 40.4 | 74 | 13 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3492-6 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 99% | 91% | 87% | 36-148% |

# Volatile Surrogate Recovery Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Method: SW846 8015 | Matrix: AQ |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3492-2 | BH23993.D | 97.0 |
| GBH1317-BSP | BH23985A.D | 87.0 |
| GBH1317-MB | BH23984A.D | 85.0 |
| MC3471-1MS | BH23986.D | 89.0 |
| MC3471-1MSD | BH23987.D | 88.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 60-126% |

(a) Recovery from GC signal #1

# Volatile Surrogate Recovery Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Method: SW846 8015 | Matrix: SO |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3492-1 | BH24000.D | 100.0 |
| MC3492-3 | BH24001.D | 114.0 |
| MC3492-5 | BH23999.D | 95.0 |
| MC3492-6 | BH23997.D | 87.0 |
| MC3492-7 | BH23998.D | 80.0 |
| MC3492-8 | BH24006.D | 95.0 |
| GBH1318-BSP | BH23985.D | 87.0 |
| GBH1318-MB | BH23984.D | 85.0 |
| MC3492-6MS | BH23995.D | 99.0 |
| MC3492-6MSD | BH23996.D | 91.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1317-CC1043 | Injection Date: | 09/20/11 |
| Lab File ID: | BH23983A.D | Injection Time: | 09:52 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1318-MB | BH23984.D | 09/20/11 | 10:31 | 32.40 |
| GBH1317-MB | BH23984A.D | 09/20/11 | 10:31 | 32.40 |
| GBH1318-BSP | BH23985.D | 09/20/11 | 11:11 | 32.40 |
| GBH1317-BSP | BH23985A.D | 09/20/11 | 11:11 | 32.40 |
| MC3471-1MS | BH23986.D | 09/20/11 | 11:51 | 32.40 |
| MC3471-1MSD | BH23987.D | 09/20/11 | 12:31 | 32.40 |
| MC3471-1 | BH23988.D | 09/20/11 | 13:11 | 32.40 |
| ZZZZZZ | BH23989.D | 09/20/11 | 13:50 | 32.40 |
| ZZZZZZ | BH23990.D | 09/20/11 | 14:30 | 32.39 |
| ZZZZZZ | BH23991.D | 09/20/11 | 15:10 | 32.40 |
| ZZZZZZ | BH23992.D | 09/20/11 | 15:50 | 32.40 |
| MC3492-2 | BH23993.D | 09/20/11 | 16:29 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1318-CC1043 | Injection Date: | 09/20/11 |
| Lab File ID: | BH23983.D | Injection Time: | 09:52 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1318-MB | BH23984.D | 09/20/11 | 10:31 | 32.40 |
| GBH1317-MB | BH23984A.D | 09/20/11 | 10:31 | 32.40 |
| GBH1318-BSP | BH23985.D | 09/20/11 | 11:11 | 32.40 |
| GBH1317-BSP | BH23985A.D | 09/20/11 | 11:11 | 32.40 |
| MC3471-1MS | BH23986.D | 09/20/11 | 11:51 | 32.40 |
| MC3471-1MSD | BH23987.D | 09/20/11 | 12:31 | 32.40 |
| MC3471-1 | BH23988.D | 09/20/11 | 13:11 | 32.40 |
| ZZZZZZ | BH23989.D | 09/20/11 | 13:50 | 32.40 |
| ZZZZZZ | BH23990.D | 09/20/11 | 14:30 | 32.39 |
| ZZZZZZ | BH23991.D | 09/20/11 | 15:10 | 32.40 |
| ZZZZZZ | BH23992.D | 09/20/11 | 15:50 | 32.40 |
| MC3492-2 | BH23993.D | 09/20/11 | 16:29 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1318-CC1043 | Injection Date: | 09/20/11 |
| Lab File ID: | BH23994.D | Injection Time: | 17:09 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3492-6MS | BH23995.D | 09/20/11 | 17:48 | 32.40 |
| MC3492-6MSD | BH23996.D | 09/20/11 | 18:28 | 32.40 |
| MC3492-6 | BH23997.D | 09/20/11 | 19:08 | 32.40 |
| MC3492-7 | BH23998.D | 09/20/11 | 19:47 | 32.40 |
| MC3492-5 | BH23999.D | 09/20/11 | 20:27 | 32.40 |
| MC3492-1 | BH24000.D | 09/20/11 | 21:07 | 32.39 |
| MC3492-3 | BH24001.D | 09/20/11 | 21:47 | 32.39 |
| ZZZZZZ | BH24002.D | 09/20/11 | 22:26 | 32.39 |
| ZZZZZZ | BH24003.D | 09/20/11 | 23:06 | 32.40 |
| ZZZZZZ | BH24004.D | 09/20/11 | 23:46 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1317-CC1043 | Injection Date: | 09/20/11 |
| Lab File ID: | BH23994A.D | Injection Time: | 17:09 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3492-6MS | BH23995.D | 09/20/11 | 17:48 | 32.40 |
| MC3492-6MSD | BH23996.D | 09/20/11 | 18:28 | 32.40 |
| MC3492-6 | BH23997.D | 09/20/11 | 19:08 | 32.40 |
| MC3492-7 | BH23998.D | 09/20/11 | 19:47 | 32.40 |
| MC3492-5 | BH23999.D | 09/20/11 | 20:27 | 32.40 |
| MC3492-1 | BH24000.D | 09/20/11 | 21:07 | 32.39 |
| MC3492-3 | BH24001.D | 09/20/11 | 21:47 | 32.39 |
| ZZZZZZ | BH24002.D | 09/20/11 | 22:26 | 32.39 |
| ZZZZZZ | BH24003.D | 09/20/11 | 23:06 | 32.40 |
| ZZZZZZ | BH24004.D | 09/20/11 | 23:46 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1318-CC1043 | Injection Date: | 09/21/11 |
| Lab File ID: | BH24005.D | Injection Time: | 00:26 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3492-8 | BH24006.D | 09/21/11 | 01:05 | 32.40 |
| ZZZZZZ | BH24007.D | 09/21/11 | 01:45 | 32.40 |
| ZZZZZZ | BH24008.D | 09/21/11 | 02:25 | 32.39 |
| ZZZZZZ | BH24009.D | 09/21/11 | 03:04 | 32.39 |
| ZZZZZZ | BH24010.D | 09/21/11 | 03:44 | 32.39 |
| ZZZZZZ | BH24011.D | 09/21/11 | 04:23 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

New England ACCUTEST LABORATORIES

## GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26262-MB | BG31013.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3492-1, MC3492-3, MC3492-5, MC3492-6, MC3492-7, MC3492-8

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 16 | mg/kg | |
| | TPH (>C28-C40) | ND | 16 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 90% | 24-147% |

# Method Blank Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26295-MB | BG31074.D | 1 | 09/24/11 | KD | 09/19/11 | OP26295 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3492-2

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 0.20 | mg/l | |
| | TPH (>C28-C40) | ND | 0.20 | mg/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 102% | 33-150% |

# Blank Spike Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26262-BS | BG31014.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3492-1, MC3492-3, MC3492-5, MC3492-6, MC3492-7, MC3492-8

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 160 | 143 | 89 | 63-139 |
| | TPH (>C28-C40) | 160 | 103 | 64 | 46-103 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 100% | 24-147% |

# Blank Spike Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26295-BS | BG31075.D | 1 | 09/24/11 | KD | 09/19/11 | OP26295 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3492-2

| CAS No. | Compound | Spike mg/l | BSP mg/l | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 2.5 | 1.85 | 74 | 46-120 |
| | TPH (>C28-C40) | 2.5 | 1.41 | 56 | 46-120 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 70% | 33-150% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26262-MS | BG31015.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| OP26262-MSD | BG31016.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |
| MC3492-6 | BG31017.D | 1 | 09/21/11 | KD | 09/15/11 | OP26262 | GBG1104 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3492-1, MC3492-3, MC3492-5, MC3492-6, MC3492-7, MC3492-8



| CAS No. | Compound | MC3492-6 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 184 | 128 | 69 | 119 | 65 | 7 | 8-154/127 |
| | TPH (>C28-C40) | ND | | 184 | 91.1 | 49 | 83.9 | 46 | 8 | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3492-6 | Limits |
|---|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 74% | 71% | 67% | 24-147% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26295-MS | BG31076.D | 1 | 09/24/11 | KD | 09/19/11 | OP26295 | GBG1108 |
| OP26295-MSD | BG31077.D | 1 | 09/24/11 | KD | 09/19/11 | OP26295 | GBG1108 |
| MC3696-1 | BG31078.D | 1 | 09/24/11 | KD | 09/19/11 | OP26295 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3492-2



| CAS No. | Compound | MC3696-1 mg/l | Q | Spike mg/l | MS mg/l | MS % | MSD mg/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 2.5 | 1.96 | 78 | 1.53 | 61 | 25 | 45-120/25 |
| | TPH (> C28-C40) | ND | | 2.5 | 1.51 | 60 | 1.24 | 50 | 20 | 45-120/25 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3696-1 | Limits |
|---|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 76% | 60% | 58% | 33-150% |

# Semivolatile Surrogate Recovery Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Method: SW846-8015 | Matrix: AQ |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3492-2 | BG31079.D | 54.0 |
| OP26295-BS | BG31075.D | 70.0 |
| OP26295-MB | BG31074.D | 102.0 |
| OP26295-MS | BG31076.D | 76.0 |
| OP26295-MSD | BG31077.D | 60.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 1-Chlorooctadecane | 33-150% |

(a) Recovery from GC signal #1

# Semivolatile Surrogate Recovery Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3492-1 | BG31037.D | 70.0 |
| MC3492-3 | BG31042.D | 86.0 |
| MC3492-5 | BG31019.D | 53.0 |
| MC3492-6 | BG31017.D | 67.0 |
| MC3492-7 | BG31018.D | 70.0 |
| MC3492-8 | BG31020.D | 49.0 |
| OP26262-BS | BG31014.D | 100.0 |
| OP26262-MB | BG31013.D | 90.0 |
| OP26262-MS | BG31015.D | 74.0 |
| OP26262-MSD | BG31016.D | 71.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 1-Chlorooctadecane | 24-147% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1104-CC1103 | Injection Date: | 09/21/11 |
| Lab File ID: | BG31012.D | Injection Time: | 09:40 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.97 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26262-MB | BG31013.D | 09/21/11 | 10:30 | 14.99 |
| OP26262-BS | BG31014.D | 09/21/11 | 11:16 | 14.99 |
| OP26262-MS | BG31015.D | 09/21/11 | 12:02 | 14.99 |
| OP26262-MSD | BG31016.D | 09/21/11 | 12:48 | 14.99 |
| MC3492-6 | BG31017.D | 09/21/11 | 13:34 | 14.99 |
| MC3492-7 | BG31018.D | 09/21/11 | 14:20 | 14.99 |
| MC3492-5 | BG31019.D | 09/21/11 | 15:05 | 14.99 |
| MC3492-8 | BG31020.D | 09/21/11 | 15:51 | 14.98 |
| ZZZZZZ | BG31021.D | 09/21/11 | 16:37 | 14.99 |
| ZZZZZZ | BG31022.D | 09/21/11 | 17:23 | 14.99 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.1

7

# GC Surrogate Retention Time Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1104-CC1103 | Injection Date: | 09/22/11 |
| Lab File ID: | BG31034.D | Injection Time: | 02:34 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.97 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31035.D | 09/22/11 | 03:20 | 14.99 |
| ZZZZZZ | BG31036.D | 09/22/11 | 04:05 | 14.99 |
| MC3492-1 | BG31037.D | 09/22/11 | 04:51 | 14.99 |
| GBG1104-ECC110 | BG31039.D | 09/22/11 | 06:23 | 14.97 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.2

7

# GC Surrogate Retention Time Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1105-CC1103 | Injection Date: | 09/22/11 |
| Lab File ID: | BG31041.D | Injection Time: | 10:31 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.97 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3492-3 | BG31042.D | 09/22/11 | 11:20 | 14.99 |
| GBG1105-ECC110 | BG31043.D | 09/22/11 | 12:06 | 14.97 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.3

7

# GC Surrogate Retention Time Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/24/11 |
| Lab File ID: | BG31073.D | Injection Time: | 13:10 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26295-MB | BG31074.D | 09/24/11 | 14:04 | 14.97 |
| OP26295-BS | BG31075.D | 09/24/11 | 14:51 | 14.96 |
| OP26295-MS | BG31076.D | 09/24/11 | 15:47 | 14.97 |
| OP26295-MSD | BG31077.D | 09/24/11 | 16:33 | 14.97 |
| MC3696-1 | BG31078.D | 09/24/11 | 17:19 | 14.97 |
| MC3492-2 | BG31079.D | 09/24/11 | 18:05 | 14.97 |
| ZZZZZZ | BG31080.D | 09/24/11 | 18:52 | 14.97 |
| OP26286-MB | BG31081.D | 09/24/11 | 19:38 | 14.98 |
| OP26286-BS | BG31082.D | 09/24/11 | 20:24 | 14.98 |
| ZZZZZZ | BG31083.D | 09/24/11 | 21:11 | 14.98 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

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## General Chemistry

## QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC3492
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC3492-1 Analyzed: 15-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP38 (9-10)091211

| | | |
|---|---|---|
| Wet Weight (Total) | 26.017 | g |
| Tare Weight | 20.694 | g |
| Dry Weight (Total) | 24.742 | g |
| Solids, Percent | 76 | % |

Sample: MC3492-3 Analyzed: 15-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP39 (9-10)091211

| | | |
|---|---|---|
| Wet Weight (Total) | 24.491 | g |
| Tare Weight | 18.394 | g |
| Dry Weight (Total) | 23.623 | g |
| Solids, Percent | 85.8 | % |

Sample: MC3492-5 Analyzed: 15-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP42 (20-22.5)91211

| | | |
|---|---|---|
| Wet Weight (Total) | 23.211 | g |
| Tare Weight | 17.637 | g |
| Dry Weight (Total) | 22.533 | g |
| Solids, Percent | 87.8 | % |

Sample: MC3492-6 Analyzed: 15-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP42 (10-12.5)91211

| | | |
|---|---|---|
| Wet Weight (Total) | 29.567 | g |
| Tare Weight | 23.025 | g |
| Dry Weight (Total) | 28.844 | g |
| Solids, Percent | 88.9 | % |

Sample: MC3492-7 Analyzed: 15-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP42 (30-31.5)91211

| | | |
|---|---|---|
| Wet Weight (Total) | 23.831 | g |
| Tare Weight | 18.272 | g |
| Dry Weight (Total) | 23.395 | g |
| Solids, Percent | 92.2 | % |

Sample: MC3492-8 Analyzed: 15-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP42 (20-22.5)91211

| | | |
|---|---|---|
| Wet Weight (Total) | 24.669 | g |
| Tare Weight | 18.845 | g |
| Dry Weight (Total) | 24.07 | g |
| Solids, Percent | 89.7 | % |

# SVE Install 2011 Data Review

**Laboratory SDG: MC3597**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 12/19/2011**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| VMP-38 (10-12.5) 091311 | VMP-38 (20-22.5) 091311 |
| VMP-38 (27-28) 091311 | SVE-16 (15-17.5) 091311 |
| SVE-15 (17.5-20) 091411 | TB-91411 |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS/LCSD recoveries and LCS/LCSD RPDs were outside evaluation criteria. Professional judgment was used to qualify acetone in sample VMP-38 (27-28) 091311. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 1.8°C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSV93-BS | VOCs | Acrolein | **374** | NA | 70-130 |
| MSV93-BS | VOCs | Acrylonitrile | **644** | NA | 70-130 |
| MSK1834-BS/BSD | VOCs | Acrolein | **63/66** | 5 | 70-130/25 |
| MSK1834-BS/BSD | VOCs | Vinyl acetate | **69**/70 | 2 | 70-130/25 |
| MSK1834-BS/BSD | VOCs | Vinyl chloride | **66/63** | 5 | 70-130/25 |
| MSM1405-BS/BSD | VOCs | Acrolein | 102/70 | **36** | 70-130/25 |
| MSM1405-BS/BSD | VOCs | Acrylonitrile | **400/352** | 13 | 70-130/25 |
| MSM1405-BS/BSD | VOCs | 2-Chloroethyl vinyl ether | **52/59** | 11 | 70-130/25 |
| MSM1405-BS/BSD | VOCs | Chloromethane | **68/60** | 12 | 70-130/25 |
| MSM1405-BS/BSD | VOCs | 1,4-Dioxane | **66**/76 | 14 | 70-130/25 |
| MSM1405-BS/BSD | VOCs | Hexachlorobutadiene | **157/150** | 5 | 70-130/25 |
| MSM1405-BS/BSD | VOCs | Tetrachloroethene | **136/133** | 3 | 70-130/25 |
| MSM1405-BS/BSD | VOCs | Vinyl acetate | **54/55** | 2 | 70-130/25 |
| MSM1405-BS/BSD | VOCs | Vinyl chloride | **69/61** | 12 | 70-130/25 |

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS MSM1405-BS/BSD was associated with trip blank sample TB-91411. Trip blank samples are quality control samples and are not qualified. LCS samples are not qualified based on RPD alone and LCS recoveries were within acceptance criteria, therefore, did not require qualification.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| VMP-38 (10-12.5) 091311 | VOCs | Acrolein | **UJ** |
| VMP-38 (10-12.5) 091311 | VOCs | Vinyl acetate | **UJ** |
| VMP-38 (10-12.5) 091311 | VOCs | Vinyl chloride | **UJ** |
| VMP-38 (20-22.5) 091311 | VOCs | Acrolein | **UJ** |
| VMP-38 (20-22.5) 091311 | VOCs | Vinyl acetate | **UJ** |
| VMP-38 (20-22.5) 091311 | VOCs | Vinyl chloride | **UJ** |
| SVE-16 (15-17.5) 091311 | VOCs | Acrolein | **UJ** |
| SVE-16 (15-17.5) 091311 | VOCs | Vinyl acetate | **UJ** |

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| SVE-16 (15-17.5) 091311 | VOCs | Vinyl chloride | **UJ** |
| SVE-15 (17.5-20) 091411 | VOCs | Acrolein | **UJ** |
| SVE-15 (17.5-20) 091411 | VOCs | Vinyl acetate | **UJ** |
| SVE-15 (17.5-20) 091411 | VOCs | Vinyl chloride | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

No

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

No

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

Yes, professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations less than two times (2X) the reporting limit (RL), since acetone is not representative of site conditions. Additionally, USEPA Method 5035A states that acidification of certain soils with sodium bisulfate may produce a false positive acetone artifact of 100-200 ppb, or more. Acetone reported at concentrations less than 200 ppb (ug/kg) were qualified.

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| VMP-38 (27-28) 091311 | Acetone | 9.4 ug/kg | **U** | Professional Judgment |

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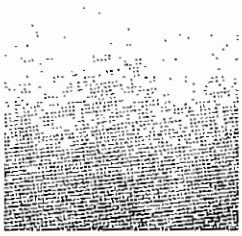
11/23/11





## Technical Report for

Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC3597

Sampling Dates: 09/13/11 - 09/14/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **97**

Reviewed on 12/19/2011

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Reza Tand
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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1

# Sample Summary

Shell Oil

Job No: MC3597

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|
| MC3597-1 | 09/13/11 | 16:10 SH | 09/15/11 | SO | Soil | VMP38 (10-12.5)091311 |
| MC3597-2 | 09/13/11 | 16:20 SH | 09/15/11 | SO | Soil | VMP38 (20-22.5)091311 |
| MC3597-3 | 09/13/11 | 16:30 SH | 09/15/11 | SO | Soil | VMP38 (27-28)091311 |
| MC3597-4 | 09/13/11 | 13:10 SH | 09/15/11 | SO | Soil | SVE16 (15-17.5)091311 |
| MC3597-5 | 09/14/11 | 10:45 SH | 09/15/11 | SO | Soil | SVE15 (17.5-20)091411 |
| MC3597-6 | 09/14/11 | 00:00 SH | 09/15/11 | AQ | Trip Blank Water | TB 91411 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC3597 |
| **Site:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Ra | **Report Date** | 9/30/2011 4:22:12 PM |

5 Sample(s), 1 Trip Blank were collected on between 09/13/2011 and 09/14/2011 and were received at Accutest on 09/15/2011 properly preserved, at 1.8 Deg. C and intact. These Samples received an Accutest job number of MC3597. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSM1405

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3684-2MS, MC3684-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 1,4-Dioxane, 2-Chloroethyl vinyl ether, Chloromethane, Hexachlorobutadiene, Tetrachloroethene, Vinyl Acetate, Vinyl chloride are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 2-Chloroethyl vinyl ether, Chloromethane, Dibromochloromethane, Hexachlorobutadiene, m,p-Xylene, o-Xylene, Tetrachloroethene, Vinyl Acetate, Vinyl chloride, Xylene (total) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,4-Dioxane, 2-Chloroethyl vinyl ether, Acetone, Hexachlorobutadiene, Tetrachloroethene, Vinyl Acetate, Vinyl chloride are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD of MSM1405-BSD for Acrolein: Outside control limits. Blank Spike meets program technical requirements.
- MSM1405-BS/BSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.
- MC3684-2MS/MSD for Acrylonitrile, Acrolein: Outside control limits. Associated samples are non-detect for this compound.
- MSM1371-ICC1371 utilized same files as MSM1370-ICC1370.
- Blank Spike Duplicate Recovery(s) for 2-Chloroethyl vinyl ether, Chloromethane, Hexachlorobutadiene, Tetrachloroethene, Vinyl Acetate, Vinyl chloride are outside control limits. Blank Spike meets program technical requirements.

**Matrix** SO **Batch ID:** MSK1834

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3459-1MS, MC3459-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Acrolein, Vinyl Acetate, Vinyl chloride are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Blank Spike Duplicate Recovery(s) for Acrolein, Vinyl chloride are outside control limits. Blank Spike meets program technical requirements.

**Matrix** SO **Batch ID:** MSV93

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3751-4MS, MC3751-4MSD were used as the QC samples indicated.
- BS/MS/MSD Recovery(s) for Acrolein, Acrylonitrile are outside control limits. Associated samples are non-detect for this compound.

## Volatiles by GCMS By Method SW846 8260B

| Matrix SO | Batch ID: MSV93 |
|---|---|

- Matrix Spike Recovery(s) for 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK) are outside control limits. Outside control limits due to possible matrix interferenee. Refer to Blank Spike.
- Matrix Spike Duplicate Reeovery(s) for 1,2-Dibromo-3-chloropropane, 1,4-Dioxane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

## Volatiles by GC By Method SW846 8015

| Matrix SO | Batch ID: GBH1318 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3492-6MS, MC3492-6MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- GBH1318-CC1043 utilized the same file as GBH1317-CC1043.

## Extractables by GC By Method SW846-8015

| Matrix SO | Batch ID: OP26286 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3644-1MS, MC3644-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Reeovery(s) for TPH (C10-C28) are outside control limits. Outside control limits due to high level in sample relative to spike amount.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN36169 |
|---|---|

- Sample(s) MC3597-1DUP were used as the QC samples for Solids, Percent.

The Aecutest Laboratories of New England certifies that all analysis were performed within method specifieation. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC3597).

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## Sample Results

Report of Analysis

# Report of Analysis



3.1

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP38 (10-12.5)091311 | | |
| Lab Sample ID: | MC3597-1 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8260B | Percent Solids: | 94.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K54915.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.47 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 610 | ug/kg | |
| 107-02-8 | Acrolein | ND | 3000 | ug/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 610 | ug/kg | |
| 71-43-2 | Benzene | ND | 61 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 610 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 610 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 240 | ug/kg | |
| 75-25-2 | Bromoform | ND | 240 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 240 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 610 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 1920 | 610 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 610 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 610 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 610 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 240 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 240 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 610 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 610 | ug/kg | |
| 67-66-3 | Chloroform | ND | 240 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 610 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 610 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 610 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 610 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 240 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 240 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 240 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 240 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 240 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 240 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 240 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 240 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 240 | ug/kg | |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.1

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP38 (10-12.5)091311 | | |
| Lab Sample ID: | MC3597-1 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8260B | Percent Solids: | 94.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 240 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 240 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 240 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 610 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 610 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 610 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 240 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 240 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 3000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 610 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 240 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 610 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 610 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 610 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 610 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 240 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 610 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 610 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 240 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 610 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 750 | 610 | ug/kg | |
| 100-42-5 | Styrene | ND | 610 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 610 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 240 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 240 | ug/kg | |
| 108-88-3 | Toluene | ND | 610 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 610 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 610 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 240 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 240 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 240 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 240 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 610 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 610 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 610 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 610 | ug/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 240 | ug/kg | UJ |
| | m,p-Xylene | ND | 240 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 240 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 240 | ug/kg | |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP38 (10-12.5)091311 | | |
| Lab Sample ID: | MC3597-1 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8260B | Percent Solids: | 94.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 106% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 102% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 106% | | 70-130% |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP38 (10-12.5)091311 | | |
| Lab Sample ID: | MC3597-1 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8015 | Percent Solids: | 94.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24007.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1318 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 2.89 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 386 | 19 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 100% | | 36-148% |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.1

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP38 (10-12.5)091311 | | |
| Lab Sample ID: | MC3597-1 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 94.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31097.D | 1 | 09/25/11 | KD | 09/17/11 | OP26286 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.2 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 19.8 | 17 | mg/kg | |
| | TPH (> C28-C40) | ND | 17 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 77% | | 24-147% |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP38 (20-22.5)091311 | | |
| Lab Sample ID: | MC3597-2 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8260B | Percent Solids: | 75.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K54918.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 2.93 g | 10.0 ml | 25.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 4800 | ug/kg | |
| 107-02-8 | Acrolein | ND | 24000 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 4800 | ug/kg | |
| 71-43-2 | Benzene | ND | 480 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 4800 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 4800 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 1900 | ug/kg | |
| 75-25-2 | Bromoform | ND | 1900 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 1900 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 4800 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 5580 | 4800 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 4800 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 4800 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 4800 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 1900 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 1900 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 4800 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 4800 | ug/kg | |
| 67-66-3 | Chloroform | ND | 1900 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 4800 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 4800 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 4800 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 4800 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 1900 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 1900 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1900 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1900 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1900 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 1900 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1900 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1900 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1900 | ug/kg | |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP38 (20-22.5)091311 | | |
| Lab Sample ID: | MC3597-2 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8260B | Percent Solids: | 75.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1900 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1900 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 1900 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 4800 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 4800 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 4800 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1900 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1900 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 24000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 4800 | ug/kg | |
| 100-41-4 | Ethylbenzene | 43700 | 1900 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 4800 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 4800 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 4800 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 4800 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1900 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 4800 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 4800 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 1900 | ug/kg | |
| 91-20-3 | Naphthalene | 10700 | 4800 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 14200 | 4800 | ug/kg | |
| 100-42-5 | Styrene | ND | 4800 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 4800 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1900 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 1900 | ug/kg | |
| 108-88-3 | Toluene | ND | 4800 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 4800 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 4800 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1900 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1900 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 1900 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 1900 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 4800 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 77100 | 4800 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 16700 | 4800 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 4800 | ug/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 1900 | ug/kg | UJ |
| | m,p-Xylene | 69200 | 1900 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 1900 | ug/kg | |
| 1330-20-7 | Xylene (total) | 69200 | 1900 | ug/kg | |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP38 (20-22.5)091311 | | |
| Lab Sample ID: | MC3597-2 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8260B | Percent Solids: | 75.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 106% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 109% | | 70-130% |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP38 (20-22.5)091311 | | |
| Lab Sample ID: | MC3597-2 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8015 | Percent Solids: | 75.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24008.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1318 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.42 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 1240 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 94% | | 36-148% |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP38 (20-22.5)091311 | | |
| Lab Sample ID: | MC3597-2 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 75.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31109.D | 1 | 09/25/11 | KD | 09/17/11 | OP26286 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.5 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 246 | 21 | mg/kg | |
| | TPH (>C28-C40) | 72.0 | 21 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 68% | | 24-147% |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP38 (27-28)091311 | | |
| Lab Sample ID: | MC3597-3 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8260B | Percent Solids: | 94.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2122.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.89 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~9.4~~ U | ~~5.4~~ 9.4 | ug/kg | U |
| 107-02-8 | Acrolein | ND | 27 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.4 | ug/kg | |
| 71-43-2 | Benzene | 0.59 | 0.54 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.4 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.4 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.2 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.2 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.2 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.4 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.4 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.4 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.4 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.4 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.2 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.2 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.4 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.4 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.2 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.4 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.4 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.4 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.4 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.2 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.2 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.2 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.2 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.2 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.2 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.2 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.2 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.2 | ug/kg | |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP38 (27-28)091311 | | |
| Lab Sample ID: | MC3597-3 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8260B | Percent Solids: | 94.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.2 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.2 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.2 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.4 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.4 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.4 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.2 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.2 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 27 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.4 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.2 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.4 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.4 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.4 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.4 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.2 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.4 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.4 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.2 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.4 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.4 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.4 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.4 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.2 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.2 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.4 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.4 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.4 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.2 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.2 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.2 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.2 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.4 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 7.0 | 5.4 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.4 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.4 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.2 | ug/kg | |
| | m,p-Xylene | ND | 2.2 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.2 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.2 | ug/kg | |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP38 (27-28)091311 | | |
| Lab Sample ID: | MC3597-3 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8260B | Percent Solids: | 94.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | | 70-130% |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP38 (27-28)091311 | | |
| Lab Sample ID: | MC3597-3 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8015 | Percent Solids: | 94.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24009.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1318 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.18 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 14.0 | 11 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 99% | | 36-148% |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP38 (27-28)091311 | | |
| Lab Sample ID: | MC3597-3 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 94.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31086.D | 1 | 09/24/11 | KD | 09/17/11 | OP26286 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.1 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | mg/kg | |
| | TPH (> C28-C40) | ND | 17 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 79% | | 24-147% |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.4

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE16 (15-17.5)091311 | | |
| Lab Sample ID: | MC3597-4 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8260B | Percent Solids: | 91.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K54916.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.38 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 830 | ug/kg | |
| 107-02-8 | Acrolein | ND | 4100 | ug/kg | U5 |
| 107-13-1 | Acrylonitrile | ND | 830 | ug/kg | |
| 71-43-2 | Benzene | ND | 83 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 830 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 830 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 330 | ug/kg | |
| 75-25-2 | Bromoform | ND | 330 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 330 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 830 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 830 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 830 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 830 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 830 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 330 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 330 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 830 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 830 | ug/kg | |
| 67-66-3 | Chloroform | ND | 330 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 830 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 830 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 830 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 830 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 330 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 330 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 330 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 330 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 330 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 330 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 330 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 330 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 330 | ug/kg | |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.4

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE16 (15-17.5)091311 | | |
| Lab Sample ID: | MC3597-4 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8260B | Percent Solids: | 91.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 330 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 330 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 330 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 830 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 830 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 830 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 330 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 330 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 4100 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 830 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 330 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 830 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 830 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 830 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 830 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 330 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 830 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 830 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 330 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 830 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 830 | ug/kg | |
| 100-42-5 | Styrene | ND | 830 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 830 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 330 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 330 | ug/kg | |
| 108-88-3 | Toluene | ND | 830 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 830 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 830 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 330 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 330 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 330 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 330 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 830 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 830 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 830 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 830 | ug/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 330 | ug/kg | UJ |
| | m,p-Xylene | ND | 330 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 330 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 330 | ug/kg | |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE16 (15-17.5)091311 | | |
| Lab Sample ID: | MC3597-4 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8260B | Percent Solids: | 91.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 102% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 102% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 106% | | 70-130% |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.4

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE16 (15-17.5)091311 | | |
| Lab Sample ID: | MC3597-4 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8015 | Percent Solids: | 91.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24010.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1318 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.33 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 87.7 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 112% | | 36-148% |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE16 (15-17.5)091311 | | |
| Lab Sample ID: | MC3597-4 | Date Sampled: | 09/13/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 91.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31103.D | 1 | 09/25/11 | KD | 09/17/11 | OP26286 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.1 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 92.9 | 18 | mg/kg | |
| | TPH (>C28-C40) | 20.5 | 18 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 86% | | 24-147% |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.5

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE15 (17.5-20)091411 | | |
| Lab Sample ID: | MC3597-5 | Date Sampled: | 09/14/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8260B | Percent Solids: | 89.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K54917.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 10.3 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 300 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1500 | ug/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 300 | ug/kg | |
| 71-43-2 | Benzene | ND | 30 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 300 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 300 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 120 | ug/kg | |
| 75-25-2 | Bromoform | ND | 120 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 120 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 300 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 1180 | 300 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 300 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 300 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 300 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 120 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 120 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 300 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 300 | ug/kg | |
| 67-66-3 | Chloroform | ND | 120 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 300 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 300 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 300 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 300 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 120 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 120 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 120 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 120 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 120 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 120 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 120 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 120 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 120 | ug/kg | |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE15 (17.5-20)091411 | | |
| Lab Sample ID: | MC3597-5 | Date Sampled: | 09/14/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8260B | Percent Solids: | 89.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 120 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 120 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 120 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 300 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 300 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 300 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 120 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 120 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1500 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 300 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 120 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 300 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 300 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 300 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 300 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 120 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 300 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 300 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 120 | ug/kg | |
| 91-20-3 | Naphthalene | 1400 | 300 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 868 | 300 | ug/kg | |
| 100-42-5 | Styrene | ND | 300 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 300 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 120 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 120 | ug/kg | |
| 108-88-3 | Toluene | ND | 300 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 300 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 300 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 120 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 120 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 120 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 120 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 300 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2250 | 300 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 561 | 300 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 300 | ug/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 120 | ug/kg | UJ |
| | m,p-Xylene | ND | 120 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 120 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 120 | ug/kg | |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE15 (17.5-20)091411 | | |
| Lab Sample ID: | MC3597-5 | Date Sampled: | 09/14/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8260B | Percent Solids: | 89.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 110% | | 70-130% |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.5

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE15 (17.5-20)091411 | | |
| Lab Sample ID: | MC3597-5 | Date Sampled: | 09/14/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846 8015 | Percent Solids: | 89.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24011.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1318 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.94 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 95% | | 36-148% |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE15 (17.5-20)091411 | | |
| Lab Sample ID: | MC3597-5 | Date Sampled: | 09/14/11 |
| Matrix: | SO - Soil | Date Received: | 09/15/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 89.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31102.D | 1 | 09/25/11 | KD | 09/17/11 | OP26286 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.1 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 43.2 | 18 | mg/kg | |
| | TPH (>C28-C40) | 26.4 | 18 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 81% | | 24-147% |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | TB 91411 | | |
| Lab Sample ID: | MC3597-6 | Date Sampled: | 09/14/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/15/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M43634.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | ug/l | |

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N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB 91411 | | |
| Lab Sample ID: | MC3597-6 | Date Sampled: | 09/14/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/15/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | ug/l | |
| | m,p-Xylene | ND | 1.0 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | ug/l | |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | TB 91411 | | |
| Lab Sample ID: | MC3597-6 | Date Sampled: | 09/14/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/15/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 91% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 93% | | 70-130% |

ND = Not detected
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES

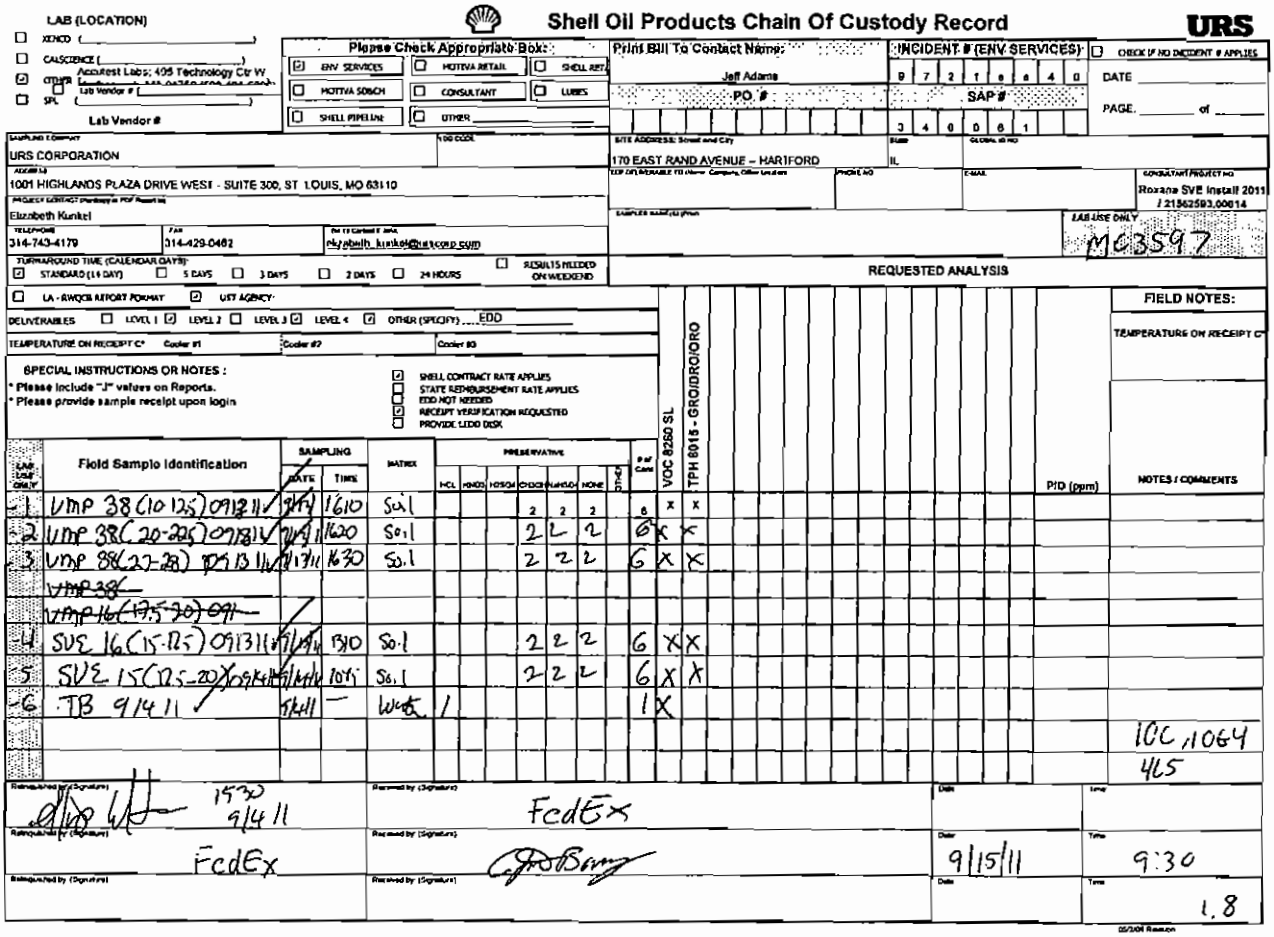


## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



# Shell Oil Products Chain Of Custody Record

URS

LAB (LOCATION)
- ☐ XENCO ( )
- ☐ CALSCIENCE ( )
- ☑ OTHER Accutest Labs; 495 Technology Ctr W
- ☐ SPL ( Lab Vendor # ( ) )

Lab Vendor #

Please Check Appropriate Box:
- ☑ ENV SERVICES
- ☐ MOTIVA RETAIL
- ☐ SHELL RET
- ☐ MOTIVA SOBCH
- ☐ CONSULTANT
- ☐ LUBES
- ☐ SHELL PIPELINE
- ☐ OTHER

Print Bill To Contact Name: Jeff Adams

PO. #

INCIDENT # (ENV SERVICES): 9 7 2 1 8 8 4 0

SAP #: 3 4 0 0 6 1

☐ CHECK IF NO INCIDENT # APPLIES

DATE

PAGE ___ of ___

SAMPLING COMPANY: URS CORPORATION

LOG CODE:

SITE ADDRESS: Street and City: 170 EAST RAND AVENUE – HARTFORD

State: IL

GLOBAL ID NO:

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST LOUIS, MO 63110

LEG DELIVERABLE TO (Name, Company, Office Location):

PHONE NO:

E-MAIL:

CONSULTANT PROJECT NO: Roxana SVE Install 2011 / 21562593.00014

PROJECT CONTACT (Hardcopy or PDF Report to): Elizabeth Kunkel

TELEPHONE: 314-743-4179

FAX: 314-429-0462

Do it Contact E-mail: elizabeth.kunkel@urscorp.com

SAMPLES NAME(S) (Print):

LAB USE ONLY: MC3597

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY

DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C°: Cooler #1 | Cooler #2 | Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
- * Please include "J" values on Reports.
- * Please provide sample receipt upon login

- ☑ SHELL CONTRACT RATE APPLIES
- ☐ STATE REIMBURSEMENT RATE APPLIES
- ☐ EDD NOT NEEDED
- ☑ RECEIPT VERIFICATION REQUESTED
- ☐ PROVIDE LEDD DISK

REQUESTED ANALYSIS

FIELD NOTES:

TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | HCL | HNO3 | H2SO4 | CH3OH | NaHSO4 | NONE | OTHER | # of Cont | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | VMP 38 (10-12.5) 091311 ✓ | 9/13/11 | 1610 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -2 | VMP 38 (20-22.5) 091311 ✓ | 9/13/11 | 1620 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -3 | VMP 38 (27-28) 091311 ✓ | 9/13/11 | 1630 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| | ~~VMP 38~~ | | | | | | | | | | | | | | | |
| | ~~VMP 16 (17.5-20) 091~~ | | | | | | | | | | | | | | | |
| -4 | SVE 16 (15-17.5) 091311 ✓ | 9/13/11 | 1310 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -5 | SVE 15 (17.5-20) 091411 ✓ | 9/14/11 | 1015 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -6 | TB 9/14/11 ✓ | 9/14/11 | — | Water | 1 | | | | | | | 1 | X | | | |
| | | | | | | | | | | | | | | | | 10C, 1064 |
| | | | | | | | | | | | | | | | | 4L5 |

| Relinquished by (Signature) | Received by (Signature) | Date | Time |
|---|---|---|---|
| [signature] 1530 9/4/11 | FedEx | | |
| FedEx | [signature] | 9/15/11 | 9:30 |
| | | | 1.8 |

05/3/08 Revision

**MC3597: Chain of Custody**
**Page 1 of 2**

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC3597 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 9/15/2011 Delivery Method: Client Service Action Required at Login: No

Project: 170 EAST RAND AVE HARTFORD IL No. Coolers: 1 Airbill #'s: N/A

| Cooler Security | Y | or | N | | Y | or | N |
|---|---|---|---|---|---|---|---|
| 1. Custody Seals Present: | ☑ | | ☐ | 3. COC Present: | ☑ | | ☐ |
| 2. Custody Seals Intact: | ☑ | | ☐ | 4. Smpl Dates/Time OK | ☑ | | ☐ |

| Cooler Temperature | Y | or | N |
|---|---|---|---|
| 1. Temp criteria achieved: | ☑ | | ☐ |
| 2. Cooler temp verification: | Infared gun | | |
| 3. Cooler media: | Ice (bag) | | |

| Quality Control Preservatio | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Trip Blank present / cooler: | ☐ | | ☐ | ☑ |
| 2. Trip Blank listed on COC: | ☐ | | ☐ | ☑ |
| 3. Samples preserved properly: | ☑ | | ☐ | |
| 4. VOCs headspace free: | ☐ | | ☐ | ☑ |

| Sample Integrity - Documentation | Y | or | N |
|---|---|---|---|
| 1. Sample labels present on bottles: | ☑ | | ☐ |
| 2. Container labeling complete: | ☑ | | ☐ |
| 3. Sample container label / COC agree: | ☑ | | ☐ |

| Sample Integrity - Condition | Y | or | N |
|---|---|---|---|
| 1. Sample recvd within HT: | ☑ | | ☐ |
| 2. All containers accounted for: | ☑ | | ☐ |
| 3. Condition of sample: | Intact | | |

| Sample Integrity - Instructions | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Analysis requested is clear: | ☑ | | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | | ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ | | ☐ | |
| 4. Compositing instructions clear: | ☐ | | ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ | | ☐ | ☑ |

Comments



4.1

4

**MC3597: Chain of Custody**
**Page 2 of 2**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3597

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3597-1 Collected: 13-SEP-11 16:10 By: SH | | | Received: 15-SEP-11 By: JB | | | |
| VMP38 (10-12.5)091311 | | | | | | |
| MC3597-1 | SM21 2540 B MOD. | 19-SEP-11 | HS | | | %SOL |
| MC3597-1 | SW846 8260B | 20-SEP-11 19:13 | GK | | | V8260SL |
| MC3597-1 | SW846 8015 | 21-SEP-11 01:45 | WS | | | V8015GRO |
| MC3597-1 | SW846-8015 | 25-SEP-11 08:00 | KD | 17-SEP-11 | FC | B8015DROORO |
| MC3597-2 Collected: 13-SEP-11 16:20 By: SH | | | Received: 15-SEP-11 By: JB | | | |
| VMP38 (20-22.5)091311 | | | | | | |
| MC3597-2 | SM21 2540 B MOD. | 19-SEP-11 | HS | | | %SOL |
| MC3597-2 | SW846 8260B | 20-SEP-11 20:35 | GK | | | V8260SL |
| MC3597-2 | SW846 8015 | 21-SEP-11 02:25 | WS | | | V8015GRO |
| MC3597-2 | SW846-8015 | 25-SEP-11 17:14 | KD | 17-SEP-11 | FC | B8015DROORO |
| MC3597-3 Collected: 13-SEP-11 16:30 By: SH | | | Received: 15-SEP-11 By: JB | | | |
| VMP38 (27-28)091311 | | | | | | |
| MC3597-3 | SM21 2540 B MOD. | 19-SEP-11 | HS | | | %SOL |
| MC3597-3 | SW846 8015 | 21-SEP-11 03:04 | WS | | | V8015GRO |
| MC3597-3 | SW846-8015 | 24-SEP-11 23:30 | KD | 17-SEP-11 | FC | B8015DROORO |
| MC3597-3 | SW846 8260B | 27-SEP-11 10:55 | AMY | | | V8260SL |
| MC3597-4 Collected: 13-SEP-11 13:10 By: SH | | | Received: 15-SEP-11 By: JB | | | |
| SVE16 (15-17.5)091311 | | | | | | |
| MC3597-4 | SM21 2540 B MOD. | 19-SEP-11 | HS | | | %SOL |
| MC3597-4 | SW846 8260B | 20-SEP-11 19:40 | GK | | | V8260SL |
| MC3597-4 | SW846 8015 | 21-SEP-11 03:44 | WS | | | V8015GRO |
| MC3597-4 | SW846-8015 | 25-SEP-11 12:37 | KD | 17-SEP-11 | FC | B8015DROORO |
| MC3597-5 Collected: 14-SEP-11 10:45 By: SH | | | Received: 15-SEP-11 By: JB | | | |
| SVE15 (17.5-20)091411 | | | | | | |
| MC3597-5 | SM21 2540 B MOD. | 19-SEP-11 | HS | | | %SOL |
| MC3597-5 | SW846 8260B | 20-SEP-11 20:07 | GK | | | V8260SL |
| MC3597-5 | SW846 8015 | 21-SEP-11 04:23 | WS | | | V8015GRO |
| MC3597-5 | SW846-8015 | 25-SEP-11 11:51 | KD | 17-SEP-11 | FC | B8015DROORO |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3597

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3597-6 TB 91411 | Collected: 14-SEP-11 00:00 By: SH | | Received: 15-SEP-11 By: JB | | | |
| MC3597-6 | SW846 8260B | 28-SEP-11 15:36 | TD | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/15/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3597-1.1 | Walk In Ref #9 | Bijan Jafari | 09/17/11 06:31 | Retrieve from Storage |
| MC3597-1.1 | Walk In Ref #9 | Mehdi Abdolrahim | 09/19/11 08:28 | Retrieve from Storage |
| Analyst unavailable for custody transfer. | | | | |
| MC3597-1.1 | Mehdi Abdolrahim | Walk In Ref #9 | 09/19/11 09:27 | Return to Storage |
| MC3597-1.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3597-1.5 | VOC Ref #10 | William Shao | 09/20/11 09:46 | Retrieve from Storage |
| MC3597-1.5 | William Shao | GCBH | 09/20/11 09:47 | Load on Instrument |
| MC3597-1.5 | GCBH | William Shao | 09/20/11 09:47 | Unload from Instrument |
| MC3597-1.5 | William Shao | VOC Ref #10 | 09/20/11 09:47 | Return to Storage |
| MC3597-1.5 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3597-1.6 | VOC Ref #10 | Gary Krasinski | 09/16/11 11:30 | Retrieve from Storage |
| MC3597-1.6 | Gary Krasinski | VOC Ref #10 | 09/21/11 11:41 | Return to Storage |
| MC3597-1.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3597-2.1 | Walk In Ref #9 | Bijan Jafari | 09/17/11 06:31 | Retrieve from Storage |
| MC3597-2.1 | Walk In Ref #9 | Mehdi Abdolrahim | 09/19/11 08:28 | Retrieve from Storage |
| Analyst unavailable for custody transfer. | | | | |
| MC3597-2.1 | Mehdi Abdolrahim | Walk In Ref #9 | 09/19/11 09:27 | Return to Storage |
| MC3597-2.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3597-2.5 | VOC Ref #10 | William Shao | 09/20/11 09:46 | Retrieve from Storage |
| MC3597-2.5 | William Shao | GCBH | 09/20/11 09:47 | Load on Instrument |
| MC3597-2.5 | GCBH | William Shao | 09/20/11 09:47 | Unload from Instrument |
| MC3597-2.5 | William Shao | VOC Ref #10 | 09/20/11 09:47 | Return to Storage |
| MC3597-2.5 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3597-2.6 | VOC Ref #10 | Gary Krasinski | 09/16/11 11:30 | Retrieve from Storage |
| MC3597-2.6 | Gary Krasinski | VOC Ref #10 | 09/21/11 11:41 | Return to Storage |
| MC3597-2.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3597-3.1 | Walk In Ref #9 | Bijan Jafari | 09/17/11 06:31 | Retrieve from Storage |
| MC3597-3.1 | Walk In Ref #9 | Mehdi Abdolrahim | 09/19/11 08:28 | Retrieve from Storage |
| Analyst unavailable for custody transfer. | | | | |
| MC3597-3.1 | Mehdi Abdolrahim | Walk In Ref #9 | 09/19/11 09:27 | Return to Storage |
| MC3597-3.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3597-3.3 | VOC Ref #10 | Amy Min Yang | 09/27/11 10:04 | Retrieve from Storage |
| MC3597-3.3 | Amy Min Yang | GCMSV | 09/27/11 10:04 | Load on Instrument |
| MC3597-3.3 | GCMSV | Amy Min Yang | 10/04/11 17:33 | Unload from Instrument |
| MC3597-3.3 | Amy Min Yang | VOC Ref #10 | 10/04/11 17:33 | Return to Storage |
| MC3597-3.3 | Scott Parsick | | 11/03/11 14:23 | Disposed |

# Accutest Internal Chain of Custody



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/15/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3597-3.5 | VOC Ref #10 | William Shao | 09/20/11 09:46 | Retrieve from Storage |
| MC3597-3.5 | William Shao | GCBH | 09/20/11 09:47 | Load on Instrument |
| MC3597-3.5 | GCBH | William Shao | 09/20/11 09:47 | Unload from Instrument |
| MC3597-3.5 | William Shao | VOC Ref #10 | 09/20/11 09:47 | Return to Storage |
| MC3597-3.5 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3597-3.6 | VOC Ref #10 | Gary Krasinski | 09/16/11 11:30 | Retrieve from Storage |
| MC3597-3.6 | Gary Krasinski | VOC Ref #10 | 09/20/11 10:56 | Return to Storage |
| MC3597-3.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3597-4.1 | Walk In Ref #9 | Bijan Jafari | 09/17/11 06:31 | Retrieve from Storage |
| MC3597-4.1 | Walk In Ref #9 | Mehdi Abdolrahim | 09/19/11 08:28 | Retrieve from Storage |
| Analyst unavailable for custody transfer. | | | | |
| MC3597-4.1 | Mehdi Abdolrahim | Walk In Ref #9 | 09/19/11 09:27 | Return to Storage |
| MC3597-4.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3597-4.5 | VOC Ref #10 | Gary Krasinski | 09/16/11 11:30 | Retrieve from Storage |
| MC3597-4.5 | Gary Krasinski | VOC Ref #10 | 09/21/11 11:41 | Return to Storage |
| MC3597-4.5 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3597-4.6 | VOC Ref #10 | William Shao | 09/20/11 09:46 | Retrieve from Storage |
| MC3597-4.6 | William Shao | GCBH | 09/20/11 09:47 | Load on Instrument |
| MC3597-4.6 | GCBH | William Shao | 09/20/11 09:47 | Unload from Instrument |
| MC3597-4.6 | William Shao | VOC Ref #10 | 09/20/11 09:47 | Return to Storage |
| MC3597-4.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3597-5.1 | Walk In Ref #9 | Bijan Jafari | 09/17/11 06:31 | Retrieve from Storage |
| MC3597-5.1 | Walk In Ref #9 | Mehdi Abdolrahim | 09/19/11 08:28 | Retrieve from Storage |
| Analyst unavailable for custody transfer. | | | | |
| MC3597-5.1 | Mehdi Abdolrahim | Walk In Ref #9 | 09/19/11 09:27 | Return to Storage |
| MC3597-5.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3597-5.5 | VOC Ref #10 | Gary Krasinski | 09/16/11 11:30 | Retrieve from Storage |
| MC3597-5.5 | Gary Krasinski | VOC Ref #10 | 09/20/11 16:08 | Return to Storage |
| MC3597-5.5 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3597-5.6 | VOC Ref #10 | William Shao | 09/20/11 09:46 | Retrieve from Storage |
| MC3597-5.6 | William Shao | GCBH | 09/20/11 09:47 | Load on Instrument |
| MC3597-5.6 | GCBH | William Shao | 09/20/11 09:47 | Unload from Instrument |
| MC3597-5.6 | William Shao | VOC Ref #10 | 09/20/11 09:47 | Return to Storage |
| MC3597-5.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3597-6.1 | VOC Ref #4 | Jugal Patel | 09/28/11 11:19 | Retrieve from Storage |
| MC3597-6.1 | Jugal Patel | GCMSM | 09/28/11 11:19 | Load on Instrument |

# Accutest Internal Chain of Custody



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/15/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3597-6.1 | GCMSM | Jugal Patel | 09/30/11 11:11 | Unload from Instrument |
| MC3597-6.1 | Jugal Patel | VOC Ref #4 | 09/30/11 11:11 | Return to Storage |
| MC3597-6.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |

New England ACCUTEST LABORATORIES



# GC/MS Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1834-MB | K54900.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-1, MC3597-2, MC3597-4, MC3597-5

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 250 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 250 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 100 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | ug/kg | |

# Method Blank Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1834-MB | K54900.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-1, MC3597-2, MC3597-4, MC3597-5

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | ug/kg | |
| | m,p-Xylene | ND | 100 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | ug/kg | |

# Method Blank Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1834-MB | K54900.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-1, MC3597-2, MC3597-4, MC3597-5

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 105% | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 108% | 70-130% |

# Method Blank Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-MB | V2121.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-3

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzeue | ND | 2.0 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | ug/kg | |

# Method Blank Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-MB | V2121.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-3

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | ug/kg | |

# Method Blank Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-MB | V2121.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-3

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

# Method Blank Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1405-MB | M43627.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-6

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | ug/l | |

# Method Blank Summary

Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1405-MB | M43627.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-6

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | ug/l | |
| | m,p-Xylene | ND | 1.0 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | ug/l | |

# Method Blank Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1405-MB | M43627.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-6

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 84% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 92% | 70-130% |

# Blank Spike Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-BS | V2120.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 51.7 | 103 | 70-130 |
| 107-02-8 | Acrolein | 250 | 935 | 374* [a] | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 322 | 644* [a] | 70-130 |
| 71-43-2 | Benzene | 50 | 55.4 | 111 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 50.4 | 101 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 51.6 | 103 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 52.2 | 104 | 70-130 |
| 75-25-2 | Bromoform | 50 | 47.5 | 95 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 49.5 | 99 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 57.9 | 116 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 61.2 | 122 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 55.1 | 110 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 52.8 | 106 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 48.6 | 97 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 49.1 | 98 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 57.5 | 115 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 56.9 | 114 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 19.1 | 38 | 10-160 |
| 67-66-3 | Chloroform | 50 | 53.5 | 107 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 48.2 | 96 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 51.5 | 103 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 53.0 | 106 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 48.9 | 98 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 51.6 | 103 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 53.0 | 106 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 56.4 | 113 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 52.7 | 105 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 51.9 | 104 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 51.2 | 102 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 57.1 | 114 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 53.2 | 106 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 55.1 | 110 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 52.2 | 104 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 52.6 | 105 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 54.0 | 108 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 52.4 | 105 | 70-130 |

# Blank Spike Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-BS | V2120.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 55.4 | 111 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 52.1 | 104 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 54.3 | 109 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 57.4 | 115 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 254 | 102 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 55.6 | 111 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 57.4 | 115 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 54.6 | 109 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 60.5 | 121 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 62.6 | 125 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 57.6 | 115 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 52.5 | 105 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 61.1 | 122 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 53.6 | 107 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 58.8 | 118 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 57.3 | 115 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 54.5 | 109 | 70-130 |
| 100-42-5 | Styrene | 50 | 56.6 | 113 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 53.8 | 108 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 55.9 | 112 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 52.5 | 105 | 70-130 |
| 108-88-3 | Toluene | 50 | 52.0 | 104 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 55.7 | 111 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 58.6 | 117 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 49.8 | 100 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 52.3 | 105 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 50.7 | 101 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 45.6 | 91 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 54.8 | 110 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 52.6 | 105 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 52.8 | 106 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 44.3 | 89 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 41.9 | 84 | 70-130 |
| | m,p-Xylene | 100 | 116 | 116 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 56.4 | 113 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 173 | 115 | 70-130 |

# Blank Spike Summary

Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-BS | V2120.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-3

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1834-BS | K54898.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |
| MSK1834-BSD | K54899.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-1, MC3597-2, MC3597-4, MC3597-5

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 2190 | 88 | 2220 | 89 | 1 | 70-130/25 |
| 107-02-8 | Acrolein | 12500 | 7900 | 63* a | 8280 | 66* a | 5 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 2500 | 2350 | 94 | 2340 | 94 | 0 | 70-130/25 |
| 71-43-2 | Benzene | 2500 | 2360 | 94 | 2290 | 92 | 3 | 70-130/25 |
| 108-86-1 | Bromobenzene | 2500 | 2380 | 95 | 2330 | 93 | 2 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 2500 | 2350 | 94 | 2310 | 92 | 2 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 2500 | 2420 | 97 | 2330 | 93 | 4 | 70-130/25 |
| 75-25-2 | Bromoform | 2500 | 2430 | 97 | 2430 | 97 | 0 | 70-130/25 |
| 74-83-9 | Bromomethane | 2500 | 2180 | 87 | 2090 | 84 | 4 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 2520 | 101 | 2450 | 98 | 3 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 2500 | 2580 | 103 | 2490 | 100 | 4 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2480 | 99 | 2400 | 96 | 3 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2440 | 98 | 2340 | 94 | 4 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 2500 | 2400 | 96 | 2280 | 91 | 5 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2360 | 94 | 2250 | 90 | 5 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 2500 | 2550 | 102 | 2440 | 98 | 4 | 70-130/25 |
| 75-00-3 | Chloroethane | 2500 | 2390 | 96 | 2280 | 91 | 5 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 2140 | 86 | 2150 | 86 | 0 | 10-160/25 |
| 67-66-3 | Chloroform | 2500 | 2360 | 94 | 2290 | 92 | 3 | 70-130/25 |
| 74-87-3 | Chloromethane | 2500 | 2080 | 83 | 2030 | 81 | 2 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2370 | 95 | 2290 | 92 | 3 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2450 | 98 | 2350 | 94 | 4 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 2500 | 2000 | 80 | 2040 | 82 | 2 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 2500 | 2550 | 102 | 2520 | 101 | 1 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 2500 | 2480 | 99 | 2440 | 98 | 2 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2450 | 98 | 2370 | 95 | 3 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2420 | 97 | 2380 | 95 | 2 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2440 | 98 | 2350 | 94 | 4 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 2140 | 86 | 2010 | 80 | 6 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2390 | 96 | 2290 | 92 | 4 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2260 | 90 | 2210 | 88 | 2 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2420 | 97 | 2360 | 94 | 3 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2300 | 92 | 2210 | 88 | 4 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2400 | 96 | 2330 | 93 | 3 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2380 | 95 | 2310 | 92 | 3 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2430 | 97 | 2380 | 95 | 2 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1834-BS | K54898.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |
| MSK1834-BSD | K54899.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-1, MC3597-2, MC3597-4, MC3597-5

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2720 | 109 | 2570 | 103 | 6 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2420 | 97 | 2340 | 94 | 3 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2480 | 99 | 2410 | 96 | 3 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2620 | 105 | 2570 | 103 | 2 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 12500 | 11400 | 91 | 10700 | 86 | 6 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2400 | 96 | 2390 | 96 | 0 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 2500 | 2580 | 103 | 2490 | 100 | 4 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2520 | 101 | 2450 | 98 | 3 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 2500 | 2580 | 103 | 2570 | 103 | 0 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 2500 | 2820 | 113 | 2710 | 108 | 4 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2550 | 102 | 2450 | 98 | 4 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2280 | 91 | 2260 | 90 | 1 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 2370 | 95 | 2360 | 94 | 0 | 70-130/25 |
| 74-95-3 | Methylene bromide | 2500 | 2320 | 93 | 2320 | 93 | 0 | 70-130/25 |
| 75-09-2 | Methylene chloride | 2500 | 2440 | 98 | 2370 | 95 | 3 | 70-130/25 |
| 91-20-3 | Naphthalene | 2500 | 2180 | 87 | 2210 | 88 | 1 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 2500 | 2460 | 98 | 2370 | 95 | 4 | 70-130/25 |
| 100-42-5 | Styrene | 2500 | 2620 | 105 | 2520 | 101 | 4 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2560 | 102 | 2450 | 98 | 4 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2360 | 94 | 2360 | 94 | 0 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 2500 | 2560 | 102 | 2460 | 98 | 4 | 70-130/25 |
| 108-88-3 | Toluene | 2500 | 2430 | 97 | 2330 | 93 | 4 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 2220 | 89 | 2210 | 88 | 0 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2330 | 93 | 2320 | 93 | 0 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2380 | 95 | 2290 | 92 | 4 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2380 | 95 | 2350 | 94 | 1 | 70-130/25 |
| 79-01-6 | Trichloroethene | 2500 | 2390 | 96 | 2320 | 93 | 3 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2310 | 92 | 2200 | 88 | 5 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2350 | 94 | 2310 | 92 | 2 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2410 | 96 | 2340 | 94 | 3 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2350 | 94 | 2310 | 92 | 2 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 2500 | 1720 | 69* [a] | 1760 | 70 | 2 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 2500 | 1660 | 66* [a] | 1580 | 63* [a] | 5 | 70-130/25 |
| | m,p-Xylene | 5000 | 5220 | 104 | 4990 | 100 | 5 | 70-130/25 |
| 95-47-6 | o-Xylene | 2500 | 2570 | 103 | 2470 | 99 | 4 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 7500 | 7790 | 104 | 7460 | 99 | 4 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1834-BS | K54898.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |
| MSK1834-BSD | K54899.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-1, MC3597-2, MC3597-4, MC3597-5

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | 99% | 70-130% |
| 2037-26-5 | Toluene-D8 | 107% | 103% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 103% | 100% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1405-BS | M43624.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| MSM1405-BSD | M43625.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-6

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 54.4 | 109 | 47.0 | 94 | 15 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 254 | 102 | 176 | 70 | 36* a | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 200 | 400* b | 176 | 352* b | 13 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 51.8 | 104 | 48.7 | 97 | 6 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 57.7 | 115 | 56.0 | 112 | 3 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 53.1 | 106 | 51.1 | 102 | 4 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 57.9 | 116 | 57.4 | 115 | 1 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 54.8 | 110 | 53.7 | 107 | 2 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 45.2 | 90 | 37.7 | 75 | 18 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 53.3 | 107 | 51.3 | 103 | 4 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 59.4 | 119 | 56.5 | 113 | 5 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 58.7 | 117 | 58.1 | 116 | 1 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 57.0 | 114 | 55.3 | 111 | 3 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 45.3 | 91 | 38.1 | 76 | 17 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 63.3 | 127 | 58.9 | 118 | 7 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 57.7 | 115 | 56.2 | 112 | 3 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 43.5 | 87 | 36.0 | 72 | 19 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 26.2 | 52* a | 29.3 | 59* a | 11 | 70-130/25 |
| 67-66-3 | Chloroform | 50 | 51.2 | 102 | 49.3 | 99 | 4 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 33.9 | 68* a | 30.2 | 60* a | 12 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 53.1 | 106 | 52.5 | 105 | 1 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 55.7 | 111 | 53.1 | 106 | 5 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 45.5 | 91 | 47.7 | 95 | 5 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 61.0 | 122 | 62.1 | 124 | 2 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 57.4 | 115 | 56.1 | 112 | 2 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 57.2 | 114 | 55.9 | 112 | 2 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 58.2 | 116 | 56.0 | 112 | 4 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 56.1 | 112 | 54.6 | 109 | 3 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 48.9 | 98 | 45.6 | 91 | 7 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 45.5 | 91 | 44.9 | 90 | 1 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 55.0 | 110 | 53.4 | 107 | 3 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 54.2 | 108 | 45.6 | 91 | 17 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 49.9 | 100 | 48.6 | 97 | 3 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 50.3 | 101 | 48.2 | 96 | 4 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 52.8 | 106 | 50.8 | 102 | 4 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 53.7 | 107 | 52.0 | 104 | 3 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1405-BS | M43624.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| MSM1405-BSD | M43625.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-6

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 60.8 | 122 | 55.1 | 110 | 10 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 57.7 | 115 | 54.0 | 108 | 7 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 49.5 | 99 | 52.9 | 106 | 7 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 56.1 | 112 | 55.8 | 112 | 1 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 166 | 66* a | 191 | 76 | 14 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 50.2 | 100 | 49.2 | 98 | 2 | 77-137/25 |
| 100-41-4 | Ethylbenzene | 50 | 57.2 | 114 | 56.8 | 114 | 1 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 78.6 | 157* a | 75.1 | 150* a | 5 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 53.9 | 108 | 52.0 | 104 | 4 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 64.0 | 128 | 63.2 | 126 | 1 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 60.0 | 120 | 59.4 | 119 | 1 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 43.5 | 87 | 42.8 | 86 | 2 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 43.3 | 87 | 47.2 | 94 | 9 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 53.9 | 108 | 54.0 | 108 | 0 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 50.5 | 101 | 43.1 | 86 | 16 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 50.3 | 101 | 51.4 | 103 | 2 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 55.9 | 112 | 54.2 | 108 | 3 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 56.9 | 114 | 54.7 | 109 | 4 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 61.3 | 123 | 61.0 | 122 | 0 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 45.3 | 91 | 47.8 | 96 | 5 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 68.1 | 136* a | 66.4 | 133* a | 3 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 59.5 | 119 | 58.9 | 118 | 1 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 58.9 | 118 | 58.2 | 116 | 1 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 63.7 | 127 | 62.1 | 124 | 3 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 58.0 | 116 | 53.0 | 106 | 9 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 55.6 | 111 | 56.7 | 113 | 2 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 58.0 | 116 | 56.3 | 113 | 3 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 54.4 | 109 | 46.2 | 92 | 16 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 45.1 | 90 | 47.0 | 94 | 4 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 54.2 | 108 | 53.3 | 107 | 2 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 54.1 | 108 | 53.2 | 106 | 2 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 26.9 | 54* a | 27.5 | 55* a | 2 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 34.3 | 69* a | 30.3 | 61* a | 12 | 70-130/25 |
| | m,p-Xylene | 100 | 123 | 123 | 119 | 119 | 3 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 60.3 | 121 | 59.9 | 120 | 1 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 183 | 122 | 179 | 119 | 2 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1405-BS | M43624.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| MSM1405-BSD | M43625.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-6

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | 82% | 70-130% |
| 2037-26-5 | Toluene-D8 | 94% | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 94% | 92% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3459-1MS | K54910.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |
| MC3459-1MSD | K54911.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |
| MC3459-1 [a] | K54903.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-1, MC3597-2, MC3597-4, MC3597-5

| CAS No. | Compound | MC3459-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 9910 | 8810 | 89 | 9070 | 92 | 3 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 49500 | 43300 | 87 | 41200 | 83 | 5 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 9910 | 9020 | 91 | 9120 | 92 | 1 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 9910 | 10200 | 103 | 9680 | 98 | 5 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 9910 | 10200 | 103 | 9870 | 100 | 3 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 9910 | 9930 | 100 | 9580 | 97 | 4 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 9910 | 10300 | 104 | 9950 | 100 | 3 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 9910 | 9900 | 100 | 9830 | 99 | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 9910 | 9790 | 99 | 9140 | 92 | 7 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 9910 | 9790 | 99 | 9730 | 98 | 1 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 9910 | 11000 | 111 | 10400 | 105 | 6 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 9910 | 10700 | 108 | 10200 | 103 | 5 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 9910 | 10500 | 106 | 9810 | 99 | 7 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 9910 | 10100 | 102 | 9500 | 96 | 6 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 9910 | 10200 | 103 | 9520 | 96 | 7 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 9910 | 10900 | 110 | 10400 | 105 | 5 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 9910 | 10500 | 106 | 9660 | 98 | 8 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 9910 | 8270 | 83 | 8430 | 85 | 2 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 9910 | 10200 | 103 | 9590 | 97 | 6 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 9910 | 9190 | 93 | 8720 | 88 | 5 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 9910 | 10100 | 102 | 9740 | 98 | 4 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 9910 | 10500 | 106 | 10100 | 102 | 4 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 9910 | 7570 | 76 | 7760 | 78 | 2 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 9910 | 10700 | 108 | 10500 | 106 | 2 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 9910 | 10100 | 102 | 10000 | 101 | 1 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 9910 | 10500 | 106 | 10000 | 101 | 5 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 9910 | 10600 | 107 | 10000 | 101 | 6 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 9910 | 10400 | 105 | 9960 | 101 | 4 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 9910 | 9040 | 91 | 8350 | 84 | 8 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 9910 | 10200 | 103 | 9680 | 98 | 5 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 9910 | 9510 | 96 | 9200 | 93 | 3 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 9910 | 10500 | 106 | 9850 | 99 | 6 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 9910 | 9960 | 101 | 9410 | 95 | 6 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 9910 | 10400 | 105 | 9640 | 97 | 8 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 9910 | 10200 | 103 | 9760 | 99 | 4 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 9910 | 9980 | 101 | 9850 | 99 | 1 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3459-1MS | K54910.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |
| MC3459-1MSD | K54911.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |
| MC3459-1 [a] | K54903.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-1, MC3597-2, MC3597-4, MC3597-5

| CAS No. | Compound | MC3459-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 9910 | 11600 | 117 | 10900 | 110 | 6 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 9910 | 10500 | 106 | 9840 | 99 | 6 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 9910 | 10400 | 105 | 10100 | 102 | 3 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 9910 | 10700 | 108 | 10600 | 107 | 1 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 49500 | 41400 | 84 | 40900 | 83 | 1 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 9910 | 9420 | 95 | 9580 | 97 | 2 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 9910 | 10900 | 110 | 10600 | 107 | 3 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 9910 | 10600 | 107 | 9910 | 100 | 7 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 9910 | 10800 | 109 | 10900 | 110 | 1 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 9910 | 12200 | 123 | 11600 | 117 | 5 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 9910 | 11000 | 111 | 10400 | 105 | 6 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 9910 | 9310 | 94 | 9160 | 92 | 2 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 9910 | 9120 | 92 | 9120 | 92 | 0 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 9910 | 9650 | 97 | 9570 | 97 | 1 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 9910 | 10500 | 106 | 9970 | 101 | 5 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 9910 | 8420 | 85 | 8430 | 85 | 0 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 9910 | 10500 | 106 | 10100 | 102 | 4 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 9910 | 11200 | 113 | 10700 | 108 | 5 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 9910 | 11000 | 111 | 10500 | 106 | 5 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 9910 | 8930 | 90 | 8920 | 90 | 0 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 9910 | 11000 | 111 | 10400 | 105 | 6 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 9910 | 10400 | 105 | 10000 | 101 | 4 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 9910 | 8690 | 88 | 8190 | 83 | 6 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 9910 | 9590 | 97 | 9240 | 93 | 4 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 9910 | 10400 | 105 | 9790 | 99 | 6 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 9910 | 9810 | 99 | 9640 | 97 | 2 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 9910 | 10700 | 108 | 10100 | 102 | 6 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 9910 | 10100 | 102 | 9280 | 94 | 8 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 9910 | 8990 | 91 | 9050 | 91 | 1 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 9910 | 10400 | 105 | 9910 | 100 | 5 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 9910 | 10200 | 103 | 9850 | 99 | 3 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 9910 | 4440 | 45* [b] | 4030 | 41* [b] | 10 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 9910 | 8910 | 90 | 8670 | 88 | 3 | 70-130/30 |
| | m,p-Xylene | ND | | 19800 | 22400 | 113 | 21200 | 107 | 6 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 9910 | 10900 | 110 | 10500 | 106 | 4 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 29700 | 33300 | 112 | 31600 | 106 | 5 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3459-1MS | K54910.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |
| MC3459-1MSD | K54911.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |
| MC3459-1 [a] | K54903.D | 1 | 09/20/11 | GK | n/a | n/a | MSK1834 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-1, MC3597-2, MC3597-4, MC3597-5

| CAS No. | Surrogate Recoveries | MS | MSD | MC3459-1 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | 96% | 104% | 70-130% |
| 2037-26-5 | Toluene-D8 | 106% | 102% | 103% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 102% | 99% | 108% | 70-130% |

(a) Elevated RL due to dilution required for matrix interference.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3751-4MS | V2134.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4MSD | V2135.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4 | V2130.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-3

| CAS No. | Compound | MC3751-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 17.6 | | 128 | 112 | 74 | 123 | 79 | 9 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 638 | 1830 | 287* [a] | 1780 | 267* [a] | 3 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 128 | 695 | 545* [a] | 746 | 559* [a] | 7 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 128 | 126 | 99 | 134 | 100 | 6 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 128 | 115 | 90 | 123 | 92 | 7 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 128 | 123 | 96 | 133 | 100 | 8 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 128 | 119 | 93 | 129 | 97 | 8 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 128 | 130 | 102 | 141 | 106 | 8 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 128 | 103 | 81 | 111 | 83 | 7 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 128 | 180 | 141* [b] | 203 | 152* [b] | 12 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 128 | 134 | 105 | 143 | 107 | 6 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 128 | 121 | 95 | 129 | 97 | 6 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 128 | 115 | 90 | 124 | 93 | 8 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 128 | 104 | 82 | 112 | 84 | 7 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 128 | 103 | 81 | 110 | 82 | 7 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 128 | 128 | 100 | 137 | 103 | 7 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 128 | 121 | 95 | 129 | 97 | 6 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 128 | ND | 0* [b] | ND | 0* [b] | nc | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 128 | 118 | 93 | 129 | 97 | 9 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 128 | 109 | 85 | 117 | 88 | 7 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 128 | 114 | 89 | 121 | 91 | 6 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 128 | 117 | 92 | 124 | 93 | 6 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 128 | 166 | 130 | 181 | 136* [b] | 9 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 128 | 126 | 99 | 138 | 103 | 9 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 128 | 139 | 109 | 150 | 112 | 8 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 128 | 129 | 101 | 137 | 103 | 6 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 128 | 119 | 93 | 125 | 94 | 5 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 128 | 116 | 91 | 124 | 93 | 7 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 128 | 103 | 81 | 107 | 80 | 4 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 128 | 125 | 98 | 135 | 101 | 8 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 128 | 125 | 98 | 135 | 101 | 8 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 128 | 122 | 96 | 130 | 97 | 6 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 128 | 118 | 93 | 128 | 96 | 8 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 128 | 118 | 93 | 126 | 94 | 7 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 128 | 124 | 97 | 133 | 100 | 7 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 128 | 131 | 103 | 141 | 106 | 7 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3751-4MS | V2134.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4MSD | V2135.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4 | V2130.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-3

| CAS No. | Compound | MC3751-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 128 | 119 | 93 | 130 | 97 | 9 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 128 | 116 | 91 | 124 | 93 | 7 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 128 | 126 | 99 | 137 | 103 | 8 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 128 | 141 | 111 | 152 | 114 | 8 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 638 | 824 | 129 | 961 | 144* [b] | I5 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 128 | 161 | 126 | 173 | 130 | 7 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 2.9 | | 128 | 132 | 101 | 141 | 104 | 7 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 128 | 117 | 92 | 125 | 94 | 7 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 128 | 198 | 155* [b] | 218 | 163* [b] | 10 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 128 | 137 | 107 | 148 | 111 | 8 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 128 | 126 | 99 | 135 | 101 | 7 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 128 | 131 | 103 | 144 | 108 | 9 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (M1BK) | ND | | 128 | 208 | 163* [b] | 225 | 169* [b] | 8 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 128 | 132 | 104 | 145 | 109 | 9 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 128 | 130 | 102 | 141 | 106 | 8 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 128 | 160 | 125 | 171 | 128 | 7 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 0.77 | J | 128 | 122 | 95 | 129 | 96 | 6 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 128 | 126 | 99 | 133 | 100 | 5 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 128 | 118 | 93 | 128 | 96 | 8 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 128 | 159 | 125 | 172 | 129 | 8 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 128 | 118 | 93 | 125 | 94 | 6 | 70-130/30 |
| 108-88-3 | Toluene | 7.7 | | 128 | 122 | 90 | 130 | 92 | 6 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 128 | 127 | 100 | 133 | 100 | 5 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 128 | 132 | 104 | 138 | 103 | 4 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 128 | 108 | 85 | 118 | 88 | 9 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 128 | 134 | 105 | 144 | 108 | 7 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 128 | 114 | 89 | 121 | 91 | 6 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 128 | 96.4 | 76 | 102 | 76 | 6 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 128 | 157 | 123 | 174 | 130 | 10 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 0.88 | J | 128 | 118 | 92 | 125 | 93 | 6 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 128 | 116 | 91 | 123 | 92 | 6 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 128 | 119 | 93 | 119 | 89 | 0 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 128 | 91.5 | 72 | 97.4 | 73 | 6 | 70-130/30 |
| | m,p-Xylene | ND | | 255 | 260 | 102 | 278 | 104 | 7 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 128 | 126 | 99 | 137 | 103 | 8 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 383 | 386 | 101 | 415 | 104 | 7 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3751-4MS | V2134.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4MSD | V2135.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4 | V2130.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-3

| CAS No. | Surrogate Recoveries | MS | MSD | MC3751-4 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | 99% | 92% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 97% | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | 97% | 95% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3684-2MS | M43641.D | 5 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| MC3684-2MSD | M43642.D | 5 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| MC3684-2 | M43640.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-6

| CAS No. | Compound | MC3684-2 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 250 | 175 | 70 | 169 | 68* [a] | 3 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 1250 | 2080 | 166* [b] | 1950 | 156* [b] | 6 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 250 | 1020 | 408* [b] | 927 | 371* [b] | 10 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 250 | 244 | 98 | 240 | 96 | 2 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 250 | 298 | 119 | 277 | 111 | 7 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 250 | 258 | 103 | 287 | 115 | 11 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 250 | 314 | 126 | 288 | 115 | 9 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 250 | 297 | 119 | 276 | 110 | 7 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 250 | 215 | 86 | 219 | 88 | 2 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 250 | 287 | 115 | 284 | 114 | 1 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 250 | 300 | 120 | 287 | 115 | 4 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 250 | 301 | 120 | 288 | 115 | 4 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 250 | 290 | 116 | 275 | 110 | 5 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 250 | 226 | 90 | 212 | 85 | 6 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 250 | 319 | 128 | 311 | 124 | 3 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 250 | 296 | 118 | 285 | 114 | 4 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 250 | 207 | 83 | 217 | 87 | 5 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 250 | 119 | 48* [a] | 97.3 | 39* [a] | 20 | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 250 | 260 | 104 | 278 | 111 | 7 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 250 | 162 | 65* [a] | 178 | 71 | 9 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 250 | 275 | 110 | 251 | 100 | 9 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 250 | 285 | 114 | 260 | 104 | 9 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 250 | 240 | 96 | 241 | 96 | 0 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 250 | 343 | 137* [a] | 312 | 125 | 9 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 250 | 310 | 124 | 280 | 112 | 10 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 250 | 294 | 118 | 283 | 113 | 4 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 250 | 288 | 115 | 280 | 112 | 3 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 250 | 281 | 112 | 275 | 110 | 2 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 250 | 252 | 101 | 256 | 102 | 2 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 250 | 245 | 98 | 252 | 101 | 3 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 250 | 289 | 116 | 269 | 108 | 7 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 250 | 270 | 108 | 251 | 100 | 7 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 250 | 264 | 106 | 266 | 106 | 1 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 250 | 272 | 109 | 265 | 106 | 3 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 250 | 277 | 111 | 248 | 99 | 11 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 250 | 291 | 116 | 246 | 98 | 17 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3684-2MS | M43641.D | 5 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| MC3684-2MSD | M43642.D | 5 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| MC3684-2 | M43640.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-6

| CAS No. | Compound | MC3684-2 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 250 | 306 | 122 | 317 | 127 | 4 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 250 | 296 | 118 | 265 | 106 | 11 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 250 | 266 | 106 | 247 | 99 | 7 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 250 | 293 | 117 | 264 | 106 | 10 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 1250 | 979 | 78 | 826 | 66* [a] | 17 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 250 | 259 | 104 | 227 | 91 | 13 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 250 | 297 | 119 | 286 | 114 | 4 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 250 | 402 | 161* [a] | 382 | 153* [a] | 5 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 250 | 250 | 100 | 207 | 83 | 19 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 250 | 325 | 130 | 304 | 122 | 7 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 250 | 296 | 118 | 293 | 117 | 1 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 250 | 230 | 92 | 237 | 95 | 3 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 250 | 239 | 96 | 209 | 84 | 13 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 250 | 288 | 115 | 268 | 107 | 7 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 250 | 253 | 101 | 242 | 97 | 4 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 250 | 264 | 106 | 254 | 102 | 4 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 250 | 287 | 115 | 259 | 104 | 10 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 250 | 305 | 122 | 276 | 110 | 10 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 250 | 315 | 126 | 317 | 127 | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 250 | 237 | 95 | 216 | 86 | 9 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | 8.2 | | 250 | 379 | 148* [a] | 350 | 137* [a] | 8 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 250 | 307 | 123 | 285 | 114 | 7 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 250 | 309 | 124 | 293 | 117 | 5 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 250 | 324 | 130 | 309 | 124 | 5 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | 8.5 | | 250 | 313 | 122 | 279 | 108 | 11 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 250 | 293 | 117 | 272 | 109 | 7 | 70-130/30 |
| 79-01-6 | Trichloroethene | 9.0 | | 250 | 318 | 124 | 288 | 112 | 10 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 250 | 279 | 112 | 262 | 105 | 6 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 250 | 237 | 95 | 213 | 85 | 11 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 250 | 272 | 109 | 263 | 105 | 3 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 250 | 275 | 110 | 263 | 105 | 4 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 250 | 148 | 59* [a] | 146 | 58* [a] | 1 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 250 | 162 | 65* [a] | 170 | 68* [a] | 5 | 70-130/30 |
| | m,p-Xylene | ND | | 500 | 659 | 132* [a] | 604 | 121 | 9 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 250 | 328 | 131* [a] | 306 | 122 | 7 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 750 | 987 | 132* [a] | 910 | 121 | 8 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3684-2MS | M43641.D | 5 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| MC3684-2MSD | M43642.D | 5 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| MC3684-2 | M43640.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3597-6

| CAS No. | Surrogate Recoveries | MS | MSD | MC3684-2 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 87% | 94% | 93% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 96% | 88% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | 89% | 91% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Volatile Internal Standard Area Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSK1834-CC1831 | Injection Date: | 09/20/11 |
| Lab File ID: | K54897.D | Injection Time: | 11:04 |
| Instrument ID: | GCMSK | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 291186 | 8.86 | 392601 | 9.71 | 187512 | 12.97 | 220958 | 15.53 | 86600 | 6.48 |
| Upper Limit [a] | 582372 | 9.36 | 785202 | 10.21 | 375024 | 13.47 | 441916 | 16.03 | 173200 | 6.98 |
| Lower Limit [b] | 145593 | 8.36 | 196301 | 9.21 | 93756 | 12.47 | 110479 | 15.03 | 43300 | 5.98 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSK1834-BS | 294901 | 8.86 | 390596 | 9.71 | 188372 | 12.97 | 222302 | 15.53 | 89802 | 6.48 |
| MSK1834-BSD | 294612 | 8.86 | 390152 | 9.71 | 189062 | 12.97 | 221558 | 15.53 | 90518 | 6.48 |
| MSK1834-MB | 299063 | 8.86 | 409363 | 9.71 | 189925 | 12.97 | 215935 | 15.53 | 91517 | 6.48 |
| ZZZZZZ | 296591 | 8.86 | 401911 | 9.71 | 186393 | 12.97 | 210445 | 15.53 | 89046 | 6.48 |
| ZZZZZZ | 293267 | 8.86 | 400449 | 9.71 | 186025 | 12.97 | 217039 | 15.53 | 88599 | 6.50 |
| MC3459-1 | 289833 | 8.87 | 393557 | 9.72 | 186122 | 12.97 | 202869 | 15.53 | 86001 | 6.48 |
| ZZZZZZ | 283580 | 8.86 | 389382 | 9.71 | 181163 | 12.97 | 205455 | 15.53 | 85356 | 6.48 |
| ZZZZZZ | 296143 | 8.86 | 401217 | 9.71 | 184374 | 12.97 | 209970 | 15.53 | 90817 | 6.48 |
| ZZZZZZ | 291547 | 8.86 | 396696 | 9.71 | 180294 | 12.97 | 213038 | 15.53 | 92091 | 6.48 |
| ZZZZZZ | 288351 | 8.87 | 393398 | 9.72 | 179268 | 12.97 | 208137 | 15.53 | 93653 | 6.48 |
| ZZZZZZ | 295413 | 8.87 | 406478 | 9.71 | 185242 | 12.97 | 215168 | 15.53 | 94810 | 6.48 |
| ZZZZZZ | 290315 | 8.86 | 399912 | 9.71 | 182403 | 12.97 | 208199 | 15.53 | 71855 | 6.48 |
| MC3459-1MS | 289151 | 8.86 | 385399 | 9.71 | 187117 | 12.97 | 218384 | 15.53 | 70951 | 6.47 |
| MC3459-1MSD | 296416 | 8.86 | 393566 | 9.71 | 191082 | 12.97 | 223462 | 15.53 | 74996 | 6.47 |
| ZZZZZZ | 297326 | 8.86 | 406633 | 9.71 | 185595 | 12.97 | 202857 | 15.53 | 76440 | 6.47 |
| ZZZZZZ | 297449 | 8.86 | 403950 | 9.71 | 181862 | 12.97 | 188411 | 15.53 | 67760 | 6.48 |
| ZZZZZZ | 301493 | 8.86 | 405991 | 9.72 | 184061 | 12.97 | 194837 | 15.53 | 87076 | 6.48 |
| MC3597-1 | 301655 | 8.86 | 409850 | 9.71 | 187283 | 12.97 | 221880 | 15.53 | 86251 | 6.48 |
| MC3597-4 | 310228 | 8.86 | 415324 | 9.71 | 190863 | 12.97 | 226956 | 15.53 | 89235 | 6.48 |
| MC3597-5 | 306821 | 8.86 | 418812 | 9.71 | 189517 | 12.97 | 224661 | 15.53 | 89992 | 6.48 |
| MC3597-2 | 308375 | 8.87 | 415932 | 9.72 | 192199 | 12.97 | 221383 | 15.53 | 92976 | 6.48 |
| ZZZZZZ | 305825 | 8.86 | 400752 | 9.71 | 181341 | 12.97 | 217595 | 15.53 | 90349 | 6.48 |
| ZZZZZZ | 304222 | 8.87 | 399239 | 9.72 | 178331 | 12.97 | 220553 | 15.53 | 92021 | 6.48 |
| ZZZZZZ | 311131 | 8.86 | 425915 | 9.71 | 196561 | 12.97 | 228129 | 15.53 | 89647 | 6.49 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1406-CC1371 | Injection Date: | 09/28/11 |
| Lab File ID: | M43623A.D | Injection Time: | 10:10 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 117142 | 9.19 | 169628 | 10.07 | 84135 | 13.34 | 109183 | 15.90 | 31139 | 6.74 |
| Upper Limit [a] | 234284 | 9.69 | 339256 | 10.57 | 168270 | 13.84 | 218366 | 16.40 | 62278 | 7.24 |
| Lower Limit [b] | 58571 | 8.69 | 84814 | 9.57 | 42068 | 12.84 | 54592 | 15.40 | 15570 | 6.24 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1405-BS | 121396 | 9.19 | 177311 | 10.07 | 87375 | 13.34 | 111616 | 15.90 | 30963 | 6.74 |
| MSM1405-BSD | 128351 | 9.19 | 183214 | 10.07 | 91967 | 13.34 | 115048 | 15.90 | 32816 | 6.74 |
| MSM1405-MB | 112986 | 9.19 | 152159 | 10.07 | 78129 | 13.34 | 98774 | 15.90 | 32823 | 6.74 |
| ZZZZZZ | 113748 | 9.19 | 163771 | 10.07 | 75524 | 13.34 | 95371 | 15.90 | 30553 | 6.75 |
| ZZZZZZ | 110141 | 9.19 | 156522 | 10.07 | 73301 | 13.34 | 95314 | 15.90 | 31873 | 6.74 |
| ZZZZZZ | 104388 | 9.19 | 145045 | 10.07 | 68764 | 13.34 | 88685 | 15.90 | 30095 | 6.73 |
| MC3597-6 | 98924 | 9.19 | 138242 | 10.07 | 67162 | 13.34 | 86965 | 15.90 | 27486 | 6.74 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1405-CC1370 | Injection Date: | 09/28/11 |
| Lab File ID: | M43623.D | Injection Time: | 10:10 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 117142 | 9.19 | 169628 | 10.07 | 84135 | 13.34 | 109183 | 15.90 | 31139 | 6.74 |
| Upper Limit [a] | 234284 | 9.69 | 339256 | 10.57 | 168270 | 13.84 | 218366 | 16.40 | 62278 | 7.24 |
| Lower Limit [b] | 58571 | 8.69 | 84814 | 9.57 | 42068 | 12.84 | 54592 | 15.40 | 15570 | 6.24 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1406-BS | 121396 | 9.19 | 177311 | 10.07 | 87375 | 13.34 | 111616 | 15.90 | 30963 | 6.74 |
| MSM1406-BSD | 128351 | 9.19 | 183214 | 10.07 | 91967 | 13.34 | 115048 | 15.90 | 32816 | 6.74 |
| MSM1406-MB | 112986 | 9.19 | 152159 | 10.07 | 78129 | 13.34 | 98774 | 15.90 | 32823 | 6.74 |
| ZZZZZZ | 100827 | 9.19 | 147794 | 10.07 | 70939 | 13.34 | 90360 | 15.90 | 30896 | 6.74 |
| ZZZZZZ | 102959 | 9.19 | 140361 | 10.07 | 68224 | 13.34 | 88197 | 15.90 | 27795 | 6.75 |
| ZZZZZZ | 98502 | 9.19 | 145091 | 10.07 | 69396 | 13.34 | 87564 | 15.90 | 29462 | 6.74 |
| ZZZZZZ | 94910 | 9.19 | 140318 | 10.07 | 64733 | 13.34 | 85152 | 15.90 | 26476 | 6.74 |
| ZZZZZZ | 93848 | 9.19 | 137086 | 10.07 | 64587 | 13.34 | 83191 | 15.90 | 28234 | 6.73 |
| ZZZZZZ | 105409 | 9.19 | 156399 | 10.07 | 75124 | 13.34 | 99189 | 15.90 | 27511 | 6.74 |
| MC3684-2 | 101823 | 9.19 | 147487 | 10.07 | 66070 | 13.34 | 89443 | 15.90 | 28556 | 6.73 |
| MC3684-2MS | 107896 | 9.19 | 155115 | 10.07 | 74083 | 13.34 | 101148 | 15.90 | 29093 | 6.74 |
| MC3684-2MSD | 107934 | 9.19 | 152959 | 10.07 | 77216 | 13.34 | 105784 | 15.90 | 28450 | 6.74 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV93-CC67 | Injection Date: | 09/27/11 |
| Lab File ID: | V2117.D | Injection Time: | 08:24 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 382176 | 6.54 | 577011 | 7.72 | 304263 | 11.08 | 309226 | 13.31 | 114564 | 3.51 |
| Upper Limit [a] | 764352 | 7.04 | 1154022 | 8.22 | 608526 | 11.58 | 618452 | 13.81 | 229128 | 4.01 |
| Lower Limit [b] | 191088 | 6.04 | 288506 | 7.22 | 152132 | 10.58 | 154613 | 12.81 | 57282 | 3.01 |
| Lab Sample ID | IS 1 AREA | RT | 1S 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSV93-BS | 386248 | 6.53 | 582182 | 7.72 | 306946 | 11.08 | 310085 | 13.31 | 121956 | 3.51 |
| MSV93-MB | 366766 | 6.53 | 570512 | 7.72 | 307573 | 11.08 | 316187 | 13.31 | 179003 | 3.50 |
| MC3597-3 | 379165 | 6.53 | 583490 | 7.72 | 324173 | 11.07 | 321761 | 13.31 | I54223 | 3.50 |
| ZZZZZZ | 408150 | 6.54 | 621283 | 7.72 | 389484 | 11.07 | 328323 | 13.31 | 172368 | 3.52 |
| ZZZZZZ | 390503 | 6.54 | 600499 | 7.72 | 326888 | 11.08 | 336997 | 13.31 | 161133 | 3.50 |
| ZZZZZZ | 400328 | 6.54 | 609421 | 7.72 | 323373 | 11.08 | 333963 | 13.31 | 160035 | 3.51 |
| ZZZZZZ | 411549 | 6.53 | 619133 | 7.72 | 317698 | 11.08 | 264849 | 13.31 | 172752 | 3.52 |
| ZZZZZZ | 407282 | 6.53 | 641252 | 7.72 | 339217 | 11.08 | 340005 | 13.32 | 76721 | 3.79 |
| ZZZZZZ | 408895 | 6.54 | 638281 | 7.73 | 339575 | 11.08 | 340895 | 13.31 | 163280 | 3.51 |
| MC3751-4 | 381330 | 6.54 | 586351 | 7.72 | 314722 | 11.08 | 317386 | 13.31 | 168953 | 3.50 |
| ZZZZZZ | 375919 | 6.54 | 575912 | 7.72 | 311706 | 11.08 | 309440 | 13.31 | 169666 | 3.51 |
| ZZZZZZ | 364332 | 6.54 | 563000 | 7.72 | 290084 | 11.08 | 300080 | 13.31 | 102976 | 3.49 |
| ZZZZZZ | 380161 | 6.54 | 589035 | 7.73 | 320498 | 11.08 | 322674 | 13.31 | 166030 | 3.51 |
| MC3751-4MS | 394375 | 6.53 | 597344 | 7.72 | 318579 | 11.08 | 324283 | 13.31 | 175067 | 3.50 |
| MC3751-4MSD | 409918 | 6.53 | 627814 | 7.72 | 335314 | 11.08 | 342075 | 13.31 | 188954 | 3.50 |
| ZZZZZZ | 385525 | 6.53 | 589564 | 7.72 | 314630 | 11.08 | 324006 | 13.31 | 170885 | 3.50 |
| ZZZZZZ | 383427 | 6.53 | 589990 | 7.72 | 316894 | 11.07 | 322911 | 13.31 | 163560 | 3.49 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Surrogate Recovery Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3597-6 | M43634.D | 91.0 | 99.0 | 93.0 |
| MC3684-2MS | M43641.D | 87.0 | 98.0 | 96.0 |
| MC3684-2MSD | M43642.D | 94.0 | 96.0 | 89.0 |
| MSM1405-BS | M43624.D | 85.0 | 94.0 | 94.0 |
| MSM1405-BSD | M43625.D | 82.0 | 98.0 | 92.0 |
| MSM1405-MB | M43627.D | 84.0 | 97.0 | 92.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3597-1 | K54915.D | 106.0 | 102.0 | 106.0 |
| MC3597-2 | K54918.D | 106.0 | 104.0 | 109.0 |
| MC3597-3 | V2122.D | 94.0 | 97.0 | 98.0 |
| MC3597-4 | K54916.D | 102.0 | 102.0 | 106.0 |
| MC3597-5 | K54917.D | 101.0 | 99.0 | 110.0 |
| MC3459-1MS | K54910.D | 101.0 | 106.0 | 102.0 |
| MC3459-1MSD | K54911.D | 96.0 | 102.0 | 99.0 |
| MC3751-4MS | V2134.D | 99.0 | 98.0 | 98.0 |
| MC3751-4MSD | V2135.D | 99.0 | 97.0 | 97.0 |
| MSK1834-BS | K54898.D | 101.0 | 107.0 | 103.0 |
| MSK1834-BSD | K54899.D | 99.0 | 103.0 | 100.0 |
| MSK1834-MB | K54900.D | 105.0 | 104.0 | 108.0 |
| MSV93-BS | V2120.D | 100.0 | 99.0 | 99.0 |
| MSV93-MB | V2121.D | 101.0 | 97.0 | 95.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

New England ACCUTEST LABORATORIES

## GC Volatiles



## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1318-MB | BH23984.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1318 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3597-1, MC3597-2, MC3597-3, MC3597-4, MC3597-5

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 85% | 36-148% |

# Blank Spike Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1318-BSP | BH23985.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1318 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3597-1, MC3597-2, MC3597-3, MC3597-4, MC3597-5

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 16.4 | 82 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 87% | 36-148% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3492-6MS | BH23995.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1318 |
| MC3492-6MSD | BH23996.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1318 |
| MC3492-6 | BH23997.D | 1 | 09/20/11 | WS | n/a | n/a | GBH1318 |



The QC reported here applies to the following samples: Method: SW846 8015

MC3597-1, MC3597-2, MC3597-3, MC3597-4, MC3597-5

| CAS No. | Compound | MC3492-6 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 54.9 | 45.9 | 84 | 40.4 | 74 | 13 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3492-6 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 99% | 91% | 87% | 36-148% |

# Volatile Surrogate Recovery Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Method: SW846 8015 | Matrix: SO |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3597-1 | BH24007.D | 100.0 |
| MC3597-2 | BH24008.D | 94.0 |
| MC3597-3 | BH24009.D | 99.0 |
| MC3597-4 | BH24010.D | 112.0 |
| MC3597-5 | BH24011.D | 95.0 |
| GBH1318-BSP | BH23985.D | 87.0 |
| GBH1318-MB | BH23984.D | 85.0 |
| MC3492-6MS | BH23995.D | 99.0 |
| MC3492-6MSD | BH23996.D | 91.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1318-CC1043 | Injection Date: | 09/20/11 |
| Lab File ID: | BH23983.D | Injection Time: | 09:52 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1318-MB | BH23984.D | 09/20/11 | 10:31 | 32.40 |
| GBH1317-MB | BH23984A.D | 09/20/11 | 10:31 | 32.40 |
| GBH1318-BSP | BH23985.D | 09/20/11 | 11:11 | 32.40 |
| GBH1317-BSP | BH23985A.D | 09/20/11 | 11:11 | 32.40 |
| MC3471-1MS | BH23986.D | 09/20/11 | 11:51 | 32.40 |
| MC3471-1MSD | BH23987.D | 09/20/11 | 12:31 | 32.40 |
| MC3471-1 | BH23988.D | 09/20/11 | 13:11 | 32.40 |
| ZZZZZZ | BH23989.D | 09/20/11 | 13:50 | 32.40 |
| ZZZZZZ | BH23990.D | 09/20/11 | 14:30 | 32.39 |
| ZZZZZZ | BH23991.D | 09/20/11 | 15:10 | 32.40 |
| ZZZZZZ | BH23992.D | 09/20/11 | 15:50 | 32.40 |
| ZZZZZZ | BH23993.D | 09/20/11 | 16:29 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1317-CC1043 | Injection Date: | 09/20/11 |
| Lab File ID: | BH23983A.D | Injection Time: | 09:52 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1318-MB | BH23984.D | 09/20/11 | 10:31 | 32.40 |
| GBH1317-MB | BH23984A.D | 09/20/11 | 10:31 | 32.40 |
| GBH1318-BSP | BH23985.D | 09/20/11 | 11:11 | 32.40 |
| GBH1317-BSP | BH23985A.D | 09/20/11 | 11:11 | 32.40 |
| MC3471-1MS | BH23986.D | 09/20/11 | 11:51 | 32.40 |
| MC3471-1MSD | BH23987.D | 09/20/11 | 12:31 | 32.40 |
| MC3471-1 | BH23988.D | 09/20/11 | 13:11 | 32.40 |
| ZZZZZZ | BH23989.D | 09/20/11 | 13:50 | 32.40 |
| ZZZZZZ | BH23990.D | 09/20/11 | 14:30 | 32.39 |
| ZZZZZZ | BH23991.D | 09/20/11 | 15:10 | 32.40 |
| ZZZZZZ | BH23992.D | 09/20/11 | 15:50 | 32.40 |
| ZZZZZZ | BH23993.D | 09/20/11 | 16:29 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1318-CC1043 | Injection Date: | 09/20/11 |
| Lab File ID: | BH23994.D | Injection Time: | 17:09 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | SI [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | SI [a] RT |
|---|---|---|---|---|
| MC3492-6MS | BH23995.D | 09/20/11 | 17:48 | 32.40 |
| MC3492-6MSD | BH23996.D | 09/20/11 | 18:28 | 32.40 |
| MC3492-6 | BH23997.D | 09/20/11 | 19:08 | 32.40 |
| ZZZZZZ | BH23998.D | 09/20/11 | 19:47 | 32.40 |
| ZZZZZZ | BH23999.D | 09/20/11 | 20:27 | 32.40 |
| ZZZZZZ | BH24000.D | 09/20/11 | 21:07 | 32.39 |
| ZZZZZZ | BH24001.D | 09/20/11 | 21:47 | 32.39 |
| ZZZZZZ | BH24002.D | 09/20/11 | 22:26 | 32.39 |
| ZZZZZZ | BH24003.D | 09/20/11 | 23:06 | 32.40 |
| ZZZZZZ | BH24004.D | 09/20/11 | 23:46 | 32.40 |

Surrogate Compounds

SI = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

6.5.3

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# GC Surrogate Retention Time Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1317-CC1043 | Injection Date: | 09/20/11 |
| Lab File ID: | BH23994A.D | Injection Time: | 17:09 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3492-6MS | BH23995.D | 09/20/11 | 17:48 | 32.40 |
| MC3492-6MSD | BH23996.D | 09/20/11 | 18:28 | 32.40 |
| MC3492-6 | BH23997.D | 09/20/11 | 19:08 | 32.40 |
| ZZZZZZ | BH23998.D | 09/20/11 | 19:47 | 32.40 |
| ZZZZZZ | BH23999.D | 09/20/11 | 20:27 | 32.40 |
| ZZZZZZ | BH24000.D | 09/20/11 | 21:07 | 32.39 |
| ZZZZZZ | BH24001.D | 09/20/11 | 21:47 | 32.39 |
| ZZZZZZ | BH24002.D | 09/20/11 | 22:26 | 32.39 |
| ZZZZZZ | BH24003.D | 09/20/11 | 23:06 | 32.40 |
| ZZZZZZ | BH24004.D | 09/20/11 | 23:46 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1318-CC1043 | Injection Date: | 09/21/11 |
| Lab File ID: | BH24005.D | Injection Time: | 00:26 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BH24006.D | 09/21/11 | 01:05 | 32.40 |
| MC3597-1 | BH24007.D | 09/21/11 | 01:45 | 32.40 |
| MC3597-2 | BH24008.D | 09/21/11 | 02:25 | 32.39 |
| MC3597-3 | BH24009.D | 09/21/11 | 03:04 | 32.39 |
| MC3597-4 | BH24010.D | 09/21/11 | 03:44 | 32.39 |
| MC3597-5 | BH24011.D | 09/21/11 | 04:23 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

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## GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26286-MB | BG31081.D | 1 | 09/24/11 | KD | 09/17/11 | OP26286 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3597-1, MC3597-2, MC3597-3, MC3597-4, MC3597-5

| CAS No. | Compound | Result | RL | Units | Q |
|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 16 | mg/kg | |
| | TPH (>C28-C40) | ND | 16 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 88% | 24-147% |

# Blank Spike Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26286-BS | BG31082.D | 1 | 09/24/11 | KD | 09/17/11 | OP26286 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3597-1, MC3597-2, MC3597-3, MC3597-4, MC3597-5

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 162 | 102 | 63 | 63-139 |
| | TPH (> C28-C40) | 162 | 94.6 | 59 | 46-103 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 94% | 24-147% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26286-MS | BG31099.D | 1 | 09/25/11 | KD | 09/17/11 | OP26286 | GBG1108 |
| OP26286-MSD | BG31100.D | 1 | 09/25/11 | KD | 09/17/11 | OP26286 | GBG1108 |
| MC3644-1 | BG31101.D | 1 | 09/25/11 | KD | 09/17/11 | OP26286 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3597-1, MC3597-2, MC3597-3, MC3597-4, MC3597-5



| CAS No. | Compound | MC3644-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 460 | | 165 | 943 | 293* [a] | 593 | 78 | 46 | 8-154/127 |
| | TPH (> C28-C40) | 27.2 | | 165 | 142 | 70 | 112 | 50 | 24 | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3644-1 | Limits |
|---|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 76% | 72% | 85% | 24-147% |

(a) Outside control limits due to high level in sample relative to spike amount.

# Semivolatile Surrogate Recovery Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3597-1 | BG31097.D | 77.0 |
| MC3597-2 | BG31109.D | 68.0 |
| MC3597-3 | BG31086.D | 79.0 |
| MC3597-4 | BG31103.D | 86.0 |
| MC3597-5 | BG31102.D | 81.0 |
| OP26286-BS | BG31082.D | 94.0 |
| OP26286-MB | BG31081.D | 88.0 |
| OP26286-MS | BG31099.D | 76.0 |
| OP26286-MSD | BG31100.D | 72.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 1-Chlorooctadecane | 24-147% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/24/11 |
| Lab File ID: | BG31073.D | Injection Time: | 13:10 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26295-MB | BG31074.D | 09/24/11 | 14:04 | 14.97 |
| OP26295-BS | BG31075.D | 09/24/11 | 14:51 | 14.96 |
| OP26295-MS | BG31076.D | 09/24/11 | 15:47 | 14.97 |
| OP26295-MSD | BG31077.D | 09/24/11 | 16:33 | 14.97 |
| MC3696-1 | BG31078.D | 09/24/11 | 17:19 | 14.97 |
| ZZZZZZ | BG31079.D | 09/24/11 | 18:05 | 14.97 |
| ZZZZZZ | BG31080.D | 09/24/11 | 18:52 | 14.97 |
| OP26286-MB | BG31081.D | 09/24/11 | 19:38 | 14.98 |
| OP26286-BS | BG31082.D | 09/24/11 | 20:24 | 14.98 |
| ZZZZZZ | BG31083.D | 09/24/11 | 21:11 | 14.98 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.1

7

# GC Surrogate Retention Time Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/24/11 |
| Lab File ID: | BG31084.D | Injection Time: | 21:57 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31085.D | 09/24/11 | 22:43 | 14.98 |
| MC3597-3 | BG31086.D | 09/24/11 | 23:30 | 14.98 |
| OP26341-MB | BG31087.D | 09/25/11 | 00:16 | 14.97 |
| OP26341-BS | BG31088.D | 09/25/11 | 01:03 | 14.97 |
| ZZZZZZ | BG31089.D | 09/25/11 | 01:49 | 14.97 |
| ZZZZZZ | BG31090.D | 09/25/11 | 02:35 | 14.96 |
| ZZZZZZ | BG31091.D | 09/25/11 | 03:22 | 14.96 |
| ZZZZZZ | BG31092.D | 09/25/11 | 04:08 | 14.97 |
| ZZZZZZ | BG31093.D | 09/25/11 | 04:54 | 14.98 |
| ZZZZZZ | BG31094.D | 09/25/11 | 05:41 | 14.98 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/25/11 |
| Lab File ID: | BG31095.D | Injection Time: | 06:27 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31096.D | 09/25/11 | 07:14 | 14.97 |
| MC3597-1 | BG31097.D | 09/25/11 | 08:00 | 14.98 |
| ZZZZZZ | BG31098.D | 09/25/11 | 08:46 | 14.98 |
| OP26286-MS | BG31099.D | 09/25/11 | 09:32 | 14.99 |
| OP26286-MSD | BG31100.D | 09/25/11 | 10:19 | 14.98 |
| MC3644-1 | BG31101.D | 09/25/11 | 11:05 | 14.98 |
| MC3597-5 | BG31102.D | 09/25/11 | 11:51 | 14.98 |
| MC3597-4 | BG31103.D | 09/25/11 | 12:37 | 14.98 |
| OP26341-MS | BG31104.D | 09/25/11 | 13:24 | 14.98 |
| OP26341-MSD | BG31105.D | 09/25/11 | 14:10 | 14.98 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/25/11 |
| Lab File ID: | BG31106.D | Injection Time: | 14:56 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3693-1 | BG31107.D | 09/25/11 | 15:42 | 14.98 |
| ZZZZZZ | BG31108.D | 09/25/11 | 16:28 | 14.98 |
| MC3597-2 | BG31109.D | 09/25/11 | 17:14 | 14.98 |
| ZZZZZZ | BG31110.D | 09/25/11 | 18:01 | 14.99 |
| ZZZZZZ | BG31111.D | 09/25/11 | 18:47 | 14.98 |
| ZZZZZZ | BG3I113.D | 09/25/I1 | 20:19 | 14.96 |
| ZZZZZZ | BG31114.D | 09/25/11 | 21:06 | 14.96 |
| ZZZZZZ | BG31115.D | 09/25/11 | 21:52 | 14.97 |
| GBG1108-ECC110 | BG31116.D | 09/25/11 | 22:38 | 14.96 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.4

7

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## General Chemistry

## QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC3597
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC3597-1 Analyzed: 19-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP38 (10-12.5)091311

| | | |
|---|---|---|
| Wet Weight (Total) | 23.898 | g |
| Tare Weight | 18.279 | g |
| Dry Weight (Total) | 23.587 | g |
| Solids, Percent | 94.5 | % |

Sample: MC3597-2 Analyzed: 19-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP38 (20-22.5)091311

| | | |
|---|---|---|
| Wet Weight (Total) | 31.501 | g |
| Tare Weight | 25.807 | g |
| Dry Weight (Total) | 30.125 | g |
| Solids, Percent | 75.8 | % |

Sample: MC3597-3 Analyzed: 19-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP38 (27-28)091311

| | | |
|---|---|---|
| Wet Weight (Total) | 25.639 | g |
| Tare Weight | 18.045 | g |
| Dry Weight (Total) | 25.22 | g |
| Solids, Percent | 94.5 | % |

Sample: MC3597-4 Analyzed: 19-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE16 (15-17.5)091311

| | | |
|---|---|---|
| Wet Weight (Total) | 31.196 | g |
| Tare Weight | 24.913 | g |
| Dry Weight (Total) | 30.682 | g |
| Solids, Percent | 91.8 | % |

Sample: MC3597-5 Analyzed: 19-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE15 (17.5-20)091411

| | | |
|---|---|---|
| Wet Weight (Total) | 24.165 | g |
| Tare Weight | 18.625 | g |
| Dry Weight (Total) | 23.576 | g |
| Solids, Percent | 89.4 | % |

# SVE Install 2011 Data Review

**Laboratory SDG: MC3639**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 12/19/2011**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| SVE-17 (17.5-20) 091511 | SVE-14 (12.5-15) 091511 |
| VMP-39 (20-22.5) 091511 DUP | VMP-39 (20-22.5) 091511 |
| VMP-39 (10-12.5) 091511 | VMP-39 (30-31) 091511 |
| TB-091511 | |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

*Yes,* the laboratory case narrative indicated VOC LCS/LCSD recoveries and LCS/LCSD RPDs were outside evaluation criteria. VOC MS/MSD recoveries were outside of evaluation criteria in sample VMP-39 (20-22.5) 091511. Professional judgment was used to qualify acetone in sample SVE-17 (17.5-20) 091511. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 1.9°C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required. Additionally, the date format in sample IDs was amended to six digit format for consistency.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSV93-BS | VOCs | Acrolein | **374** | NA | 70-130 |
| MSV93-BS | VOCs | Acrylonitrile | **644** | NA | 70-130 |
| MSK1835-BS/BSD | VOCs | Vinyl chloride | **68/63** | 7 | 70-130/25 |
| MSM1403-BS/BSD | VOCs | Acetone | **139**/106 | **27** | 70-130/25 |
| MSM1403-BS/BSD | VOCs | Acrolein | 100/72 | **32** | 70-130/25 |
| MSM1403-BS/BSD | VOCs | Acrylonitrile | **394/438** | 11 | 70-130/25 |
| MSM1403-BS/BSD | VOCs | 2-Chloroethyl vinyl ether | **59/57** | 3 | 70-130/25 |
| MSM1403-BS/BSD | VOCs | Dibromochromomethane | **137**/126 | 8 | 70-130/25 |
| MSM1403-BS/BSD | VOCs | Hexechlorobutadiene | **148/146** | 1 | 70-130/25 |
| MSM1403-BS/BSD | VOCs | 2-Hexanone | **136**/105 | **26** | 70-130/25 |
| MSM1403-BS/BSD | VOCs | Tetrachloroethene | **140/133** | 5 | 70-130/25 |
| MSM1403-BS/BSD | VOCs | Vinyl acetate | **55/60** | 9 | 70-130/25 |
| MSM1403-BS/BSD | VOCs | Vinyl chloride | **69/69** | 1 | 70-130/25 |

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS/LCSD MSM1403-BS/BSD was associated with trip blank sample TB-091511. Trip blank samples are quality control samples and are not qualified. LCS samples are not qualified based on RPD alone and LCS recoveries were within acceptance criteria, therefore, did not require qualification.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| SVE-14 (12.5-15) 091511 | VOCs | Vinyl chloride | **UJ** |
| VMP-39 (20-22.5) 091511 DUP | VOCs | Vinyl chloride | **UJ** |
| VMP-39 (20-22.5) 091511 | VOCs | Vinyl chloride | **UJ** |
| VMP-39 (10-12.5) 091511 | VOCs | Vinyl chloride | **UJ** |
| VMP-39 (30-31) 091511 | VOCs | Vinyl chloride | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, sample VMP-39 (20-22.5) 091511 was spiked and analyzed for VOCs.

*Were MS/MSD recoveries within evaluation criteria?*

No

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/RPD Criteria |
|---|---|---|---|---|---|
| VMP-39 (20-22.5) 091511 | VOCs | Vinyl acetate | **50/51** | 3 | 70-130/30 |

USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone and LCS recoveries were within evaluation criteria with the exception of compounds listed and qualified as appropriate in Section 5.0 of this data review. No further qualification of the data was required.

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

Yes

| Field ID | Field Duplicate ID |
|---|---|
| VMP-39 (20-22.5) 091511 | VMP-39 (20-22.5) 091511 DUP |

*Were field duplicates within evaluation criteria?*

No

| Field ID | Field Duplicate ID | Parameter | Analyte | RPD | Qualification |
|---|---|---|---|---|---|
| VMP-39 (20-22.5) 091511 | VMP-39 (20-22.5) 091511 DUP | TPH-GRO | TPH-GRO | **>5X RL** | **J/J** |

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

Yes, professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations greater than two times (2X) the reporting limit (RL), since acetone is not representative of site conditions. Additionally, USEPA Method 5035A states that acidification of certain soils with sodium bisulfate may produce a false positive acetone artifact of 100-200 ppb, or more. Acetone reported at concentrations less than 200 ppb (ug/kg) were qualified.

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| SVE-17 (17.5-20) 091511 | Acetone | 37.2 ug/kg | **U** | Professional Judgment |

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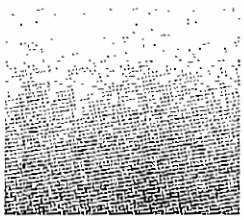



Technical Report for

Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC3639

Sampling Date: 09/15/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **102**

Reviewed on 12/19/2011

Reza Tand
Lab Director

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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# Sample Summary

Shell Oil

Job No: MC3639

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| MC3639-1 | 09/15/11 | 15:30 | LR | 09/16/11 | SO | Soil | SVE17 (17.5-20)91511 |
| MC3639-2 | 09/15/11 | 09:10 | LR | 09/16/11 | SO | Soil | SVE14 (12.5-15)91511 |
| MC3639-3 | 09/15/11 | 09:45 | LR | 09/16/11 | SO | Soil | VMP39 (20-22.5)91511 DUP |
| MC3639-4 | 09/15/11 | 09:45 | LR | 09/16/11 | SO | Soil | VMP39 (20-22.5)91511 |
| MC3639-5 | 09/15/11 | 09:40 | LR | 09/16/11 | SO | Soil | VMP39 (10-12.5)91511 |
| MC3639-6 | 09/15/11 | 10:00 | LR | 09/16/11 | SO | Soil | VMP39 (30-31)91511 |
| MC3639-7 | 09/15/11 | 17:00 | LR | 09/16/11 | AQ | Trip Blank Water | TB091511 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC3639 |
| **Site:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Ra | **Report Date** | 10/3/2011 12:40:25 PM |

6 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were collected on 09/15/2011 and were received at Accutest on 09/16/2011 properly preserved, at 1.9 Deg. C and intact. These Samples reeeived an Accutest job number of MC3639. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Seetion of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSM1403

- All samples were analyzed within the recommended method holding time. .
- Sample(s) MC3779-8MS, MC3779-8MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific eriteria.
- Blank Spike Recovery(s) for 2-Chloroethyl vinyl ether, 2-Hexanone, Acetone, Dibromoehloromethane, Hexachlorobutadiene, Tetrachloroethene, Vinyl Acetate, Vinyl chloride are outside eontrol limits. Blank Spike meets program teehnical requirements.
- Matrix Spike Recovery(s) for 2-Chloroethyl vinyl ether, Chloromethane, Hexachlorobutadiene, Vinyl Acctate, Vinyl chloride are outside control liinits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for Chloromethane, Hexachlorobutadicne, Methyl Tert Butyl Ether, Tetrachloroethene, Vinyl Acetate, Vinyl chloride, 2-Chloroethyl vinyl ether are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 2-Chloroethyl vinyl ether are outside control limits for sample MC3779-8MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- RPD(s) for MSM1403-BSD for Acetone, 2-Hexanone, Acrolein: Outside eontrol limits. Blank Spike meets program technieal requirements.
- MC3779-8MS/8MSD for Acrolein, Acrylonitrile: Outside control limits. Associated samples are non-detect for this eompound.
- Blank Spike Duplieate Recovery(s) for 2-Chloroethyl vinyl ether, Hexachlorobutadiene, Tetrachloroethene, Vinyl Acetate, Vinyl chloride are outside control limits. Blank Spike meets program technical requirements.

**Matrix** SO **Batch ID:** MSK1835

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3639-4MS, MC3639-4MSD were used as the QC samples indicated.
- All method blanks for this bateh meet method speeific criteria.
- BS/BSD Recovery(s) for Vinyl chloride are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Reeovery(s) for Vinyl Acetate are outside control limits. Outside eontrol limits due to possible matrix interference. Refer to Blank Spike.

**Matrix** SO **Batch ID:** MSV93

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3751-4MS, MC3751-4MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,2-Dibromo-3-chloropropane, 1,4-Dioxane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSV93-BS/MS/MSD for Acrolein, Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

## Volatiles by GC By Method SW846 8015

| Matrix SO | Batch ID: GBH1319 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3644-1MS, MC3644-1MSD were used as the QC samples indicated.
- MS/MSD Recovery(s) for TPH-GRO (VOA) are outside control limits. Outside control limits due to high level in sample relative to spike amount.

## Extractables by GC By Method SW846-8015

| Matrix SO | Batch ID: OP26286 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3644-1MS, MC3644-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for TPH (C10-C28) are outside control limits. Outside control limits due to high level in sample relative to spike amount.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN36185 |
|---|---|

- Sample(s) MC3644-1DUP were used as the QC samples for Solids, Percent

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC3639).

New England ACCUTEST LABORATORIES

## Sample Results

Report of Analysis

# Report of Analysis



3.1

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE17 (17.5-20)91511 | | |
| Lab Sample ID: | MC3639-1 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 96.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2123.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.52 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~37.2U~~ | ~~5.8~~ 37.2 | 1.3 | ug/kg | U |
| 107-02-8 | Acrolein | ND | 29 | 19 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.8 | 2.3 | ug/kg | |
| 71-43-2 | Benzene | 2.6 | 0.58 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.8 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.8 | 1.2 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.3 | 0.24 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.3 | 0.54 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.3 | 0.78 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.8 | 1.4 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 107 | 5.8 | 1.5 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 63.6 | 5.8 | 0.19 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | 3.8 | 5.8 | 0.75 | ug/kg | J |
| 75-15-0 | Carbon disulfide | ND | 5.8 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.3 | 0.26 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.3 | 0.11 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.8 | 0.30 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.8 | 5.8 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.3 | 0.17 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.8 | 0.25 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.8 | 0.16 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.8 | 1.3 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.8 | 5.8 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.3 | 0.75 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.3 | 0.22 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.3 | 0.17 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.3 | 0.17 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.3 | 0.16 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.3 | 0.39 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.3 | 0.18 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.3 | 0.17 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.3 | 0.37 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE17 (17.5-20)91511 | | |
| Lab Sample ID: | MC3639-1 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 96.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.3 | 0.31 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.3 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.3 | 0.26 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.8 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.8 | 0.21 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.8 | 0.22 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.3 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.3 | 0.79 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 29 | 29 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.8 | 3.6 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.3 | 0.15 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.8 | 5.8 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.8 | 1.2 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 83.9 | 5.8 | 0.18 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | 22.4 | 5.8 | 0.19 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.3 | 0.71 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.8 | 0.97 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.8 | 0.35 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.3 | 0.42 | ug/kg | |
| 91-20-3 | Naphthalene | 231 | 5.8 | 5.8 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 107 | 5.8 | 0.19 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.8 | 0.58 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.8 | 1.2 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.3 | 0.20 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.3 | 0.19 | ug/kg | |
| 108-88-3 | Toluene | 5.1 | 5.8 | 0.21 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.8 | 1.3 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.8 | 5.8 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.3 | 0.21 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.3 | 0.29 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.3 | 0.22 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.3 | 1.1 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.8 | 0.24 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 12.7 | 5.8 | 0.18 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 5.4 | 5.8 | 0.21 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 5.8 | 1.4 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.3 | 0.74 | ug/kg | |
| | m,p-Xylene | 0.91 | 2.3 | 0.29 | ug/kg | J |
| 95-47-6 | o-Xylene | ND | 2.3 | 0.21 | ug/kg | |
| 1330-20-7 | Xylene (total) | 0.91 | 2.3 | 0.14 | ug/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE17 (17.5-20)91511 | | |
| Lab Sample ID: | MC3639-1 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 96.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 116% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 122% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE17 (17.5-20)91511 | | |
| Lab Sample ID: | MC3639-1 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8015 | Percent Solids: | 96.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24029.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.15 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 12.0 | 13 | 9.2 | mg/kg | J |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 109% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE17 (17.5-20)91511 | | |
| Lab Sample ID: | MC3639-1 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 96.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31098.D | 1 | 09/25/11 | KD | 09/17/11 | OP26286 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.5 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 29.7 | 17 | 13 | mg/kg | |
| | TPH (>C28-C40) | 17.2 | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 79% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE14 (12.5-15)91511 | | |
| Lab Sample ID: | MC3639-2 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 86.7 |
| Project: | URSMOSTL:Roxaua SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K54932.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.97 g | 10.0 ml | 10.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 6200 | 1400 | ug/kg | |
| 107-02-8 | Acrolein | ND | 31000 | 21000 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6200 | 2500 | ug/kg | |
| 71-43-2 | Benzene | ND | 620 | 150 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 6200 | 240 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6200 | 1300 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2500 | 260 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2500 | 580 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2500 | 840 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 6200 | 1500 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 2110 | 6200 | 1600 | ug/kg | J |
| 135-98-8 | sec-Butylbenzene | 1990 | 6200 | 200 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 6200 | 810 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 6200 | 1200 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2500 | 280 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2500 | 120 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6200 | 320 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6200 | 6200 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2500 | 180 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6200 | 270 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 6200 | 170 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6200 | 1400 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6200 | 6200 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2500 | 810 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2500 | 240 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2500 | 190 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2500 | 180 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2500 | 170 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2500 | 420 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2500 | 190 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2500 | 180 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2500 | 390 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.2

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE14 (12.5-15)91511 | | |
| Lab Sample ID: | MC3639-2 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 86.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2500 | 330 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2500 | 310 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2500 | 280 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6200 | 1400 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6200 | 230 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6200 | 240 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2500 | 1200 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2500 | 850 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 31000 | 31000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6200 | 3900 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2500 | 160 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 6200 | 6200 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6200 | 1300 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 2230 | 6200 | 200 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 622 | 6200 | 200 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2500 | 770 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6200 | 1000 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6200 | 380 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2500 | 450 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 6200 | 6200 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 3180 | 6200 | 200 | ug/kg | J |
| 100-42-5 | Styrene | ND | 6200 | 620 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6200 | 1200 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2500 | 220 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2500 | 210 | ug/kg | |
| 108-88-3 | Toluene | ND | 6200 | 220 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6200 | 1400 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6200 | 6200 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2500 | 230 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2500 | 310 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2500 | 240 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2500 | 1100 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6200 | 260 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 6200 | 190 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 677 | 6200 | 220 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 6200 | 1500 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2500 | 800 | ug/kg | UJ |
| | m,p-Xylene | ND | 2500 | 310 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2500 | 230 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2500 | 160 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.2

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE14 (12.5-15)91511 | | |
| Lab Sample ID: | MC3639-2 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 86.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 114% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 117% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE14 (12.5-15)91511 | | |
| Lab Sample ID: | MC3639-2 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8015 | Percent Solids: | 86.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24030.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.01 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 1080 | 15 | 11 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 114% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.2

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE14 (12.5-15)91511 | | |
| Lab Sample ID: | MC3639-2 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 86.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31111.D | 1 | 09/25/11 | KD | 09/17/11 | OP26286 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.6 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 455 | 18 | 14 | mg/kg | |
| | TPH (> C28-C40) | 191 | 18 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 63% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (20-22.5)91511 DUP | | |
| Lab Sample ID: | MC3639-3 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 96.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K54930.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.27 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 620 | 140 | ug/kg | |
| 107-02-8 | Acrolein | ND | 3100 | 2100 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 620 | 250 | ug/kg | |
| 71-43-2 | Benzene | ND | 62 | 15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 620 | 24 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 620 | 130 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 250 | 26 | ug/kg | |
| 75-25-2 | Bromoform | ND | 250 | 58 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 250 | 83 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 620 | 150 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 554 | 620 | 160 | ug/kg | J |
| 135-98-8 | sec-Butylbenzene | 203 | 620 | 20 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 620 | 81 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 620 | 120 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 250 | 28 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 250 | 12 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 620 | 32 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 620 | 620 | ug/kg | |
| 67-66-3 | Chloroform | ND | 250 | 18 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 620 | 27 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 620 | 17 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 620 | 140 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 620 | 620 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 250 | 80 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 250 | 24 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 250 | 19 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 250 | 18 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 250 | 17 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 250 | 42 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 250 | 19 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 250 | 18 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 250 | 39 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (20-22.5)91511 DUP | | |
| Lab Sample ID: | MC3639-3 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 96.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 250 | 33 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 250 | 31 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 250 | 28 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 620 | 140 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 620 | 23 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 620 | 24 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 250 | 120 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 250 | 85 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 3100 | 3100 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 620 | 380 | ug/kg | |
| 100-41-4 | Ethylbenzene | 1250 | 250 | 16 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 620 | 620 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 620 | 130 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 451 | 620 | 20 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 274 | 620 | 20 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 250 | 76 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 620 | 100 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 620 | 38 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 250 | 45 | ug/kg | |
| 91-20-3 | Naphthalene | 1140 | 620 | 620 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 665 | 620 | 20 | ug/kg | |
| 100-42-5 | Styrene | ND | 620 | 62 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 620 | 120 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 250 | 22 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 250 | 21 | ug/kg | |
| 108-88-3 | Toluene | ND | 620 | 22 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 620 | 140 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 620 | 620 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 250 | 23 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 250 | 31 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 250 | 24 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 250 | 110 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 620 | 26 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 3790 | 620 | 19 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 773 | 620 | 22 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 620 | 150 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 250 | 80 | ug/kg | NJ |
| | m,p-Xylene | 1050 | 250 | 31 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 250 | 23 | ug/kg | |
| 1330-20-7 | Xylene (total) | 1050 | 250 | 16 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (20-22.5)91511 DUP | | |
| Lab Sample ID: | MC3639-3 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 96.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 108% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 111% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (20-22.5)91511 DUP | | |
| Lab Sample ID: | MC3639-3 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8015 | Percent Solids: | 96.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24031.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.23 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 121 | 12 | 9.0 | mg/kg | J |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 109% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (20-22.5)91511 DUP | | |
| Lab Sample ID: | MC3639-3 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 96.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31094.D | 1 | 09/25/11 | KD | 09/17/11 | OP26286 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.2 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 57.5 | 17 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 83% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (20-22.5)91511 | | |
| Lab Sample ID: | MC3639-4 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 96.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K54931.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.88 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 540 | 120 | ug/kg | |
| 107-02-8 | Acrolein | ND | 2700 | 1800 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 540 | 220 | ug/kg | |
| 71-43-2 | Benzene | ND | 54 | 13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 540 | 21 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 540 | 110 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 220 | 23 | ug/kg | |
| 75-25-2 | Bromoform | ND | 220 | 51 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 220 | 73 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 540 | 130 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 182 | 540 | 140 | ug/kg | J |
| 135-98-8 | sec-Butylbenzene | 68.2 | 540 | 18 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 540 | 70 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 540 | 100 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 220 | 24 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 220 | 10 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 540 | 28 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 540 | 540 | ug/kg | |
| 67-66-3 | Chloroform | ND | 220 | 16 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 540 | 23 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 540 | 15 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 540 | 120 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 540 | 540 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 220 | 70 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 220 | 21 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 220 | 16 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 220 | 16 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 220 | 15 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 220 | 37 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 220 | 16 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 220 | 16 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 220 | 34 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.4

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (20-22.5)91511 | | |
| Lab Sample ID: | MC3639-4 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 96.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 220 | 29 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 220 | 27 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 220 | 25 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 540 | 130 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 540 | 20 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 540 | 21 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 220 | 110 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 220 | 74 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 2700 | 2700 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 540 | 340 | ug/kg | |
| 100-41-4 | Ethylbenzene | 299 | 220 | 14 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 540 | 540 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 540 | 110 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 124 | 540 | 17 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 94.7 | 540 | 17 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 220 | 67 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 540 | 91 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 540 | 33 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 220 | 39 | ug/kg | |
| 91-20-3 | Naphthalene | 544 | 540 | 540 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 188 | 540 | 17 | ug/kg | J |
| 100-42-5 | Styrene | ND | 540 | 54 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 540 | 110 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 220 | 19 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 220 | 18 | ug/kg | |
| 108-88-3 | Toluene | ND | 540 | 19 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 540 | 120 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 540 | 540 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 220 | 20 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 220 | 27 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 220 | 21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 220 | 99 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 540 | 23 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1110 | 540 | 17 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 225 | 540 | 20 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 540 | 130 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 220 | 70 | ug/kg | UJ |
| | m,p-Xylene | 267 | 220 | 27 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 220 | 20 | ug/kg | |
| 1330-20-7 | Xylene (total) | 267 | 220 | 14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.4

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (20-22.5)91511 | | |
| Lab Sample ID: | MC3639-4 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 96.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 112% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 108% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 112% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.4

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (20-22.5)91511 | | |
| Lab Sample ID: | MC3639-4 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8015 | Percent Solids: | 96.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24032.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.22 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 49.0 | 12 | 9.0 | mg/kg | J |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 111% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (20-22.5)91511 | | |
| Lab Sample ID: | MC3639-4 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 96.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31093.D | 1 | 09/25/11 | KD | 09/17/11 | OP26286 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.3 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 71.7 | 17 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 75% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (10-12.5)91511 | | |
| Lab Sample ID: | MC3639-5 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 88.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K54933.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.74 g | 10.0 ml | 10.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 6300 | 1500 | ug/kg | |
| 107-02-8 | Acrolein | ND | 31000 | 21000 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6300 | 2500 | ug/kg | |
| 71-43-2 | Benzene | ND | 630 | 160 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 6300 | 240 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6300 | 1300 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2500 | 260 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2500 | 590 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2500 | 850 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 6300 | 1500 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 8670 | 6300 | 1600 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 3680 | 6300 | 210 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 6300 | 820 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 6300 | 1200 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2500 | 280 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2500 | 120 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6300 | 330 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6300 | 6300 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2500 | 190 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6300 | 270 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 6300 | 180 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6300 | 1400 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6300 | 6300 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2500 | 820 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2500 | 240 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2500 | 190 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2500 | 180 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2500 | 180 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2500 | 430 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2500 | 190 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2500 | 180 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2500 | 400 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (10-12.5)91511 | | |
| Lab Sample ID: | MC3639-5 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 88.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2500 | 340 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2500 | 320 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2500 | 290 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6300 | 1500 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6300 | 230 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6300 | 240 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2500 | 1300 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2500 | 860 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 31000 | 31000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6300 | 3900 | ug/kg | |
| 100-41-4 | Ethylbenzene | 107000 | 2500 | 160 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 6300 | 6300 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6300 | 1300 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 12800 | 6300 | 200 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | 3360 | 6300 | 200 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2500 | 780 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6300 | 1100 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6300 | 380 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2500 | 450 | ug/kg | |
| 91-20-3 | Naphthalene | 17800 | 6300 | 6300 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 27000 | 6300 | 200 | ug/kg | |
| 100-42-5 | Styrene | ND | 6300 | 630 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6300 | 1300 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2500 | 220 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2500 | 210 | ug/kg | |
| 108-88-3 | Toluene | ND | 6300 | 220 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6300 | 1400 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6300 | 6300 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2500 | 230 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2500 | 320 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2500 | 250 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2500 | 1200 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6300 | 260 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 54600 | 6300 | 200 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 8480 | 6300 | 230 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 6300 | 1500 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2500 | 810 | ug/kg | UJ |
| | m,p-Xylene | 37200 | 2500 | 320 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2500 | 230 | ug/kg | |
| 1330-20-7 | Xylene (total) | 37200 | 2500 | 160 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (10-12.5)91511 | | |
| Lab Sample ID: | MC3639-5 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 88.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 109% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 110% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (10-12.5)91511 | | |
| Lab Sample ID: | MC3639-5 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8015 | Percent Solids: | 88.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24033.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.71 g | 10.0 ml | 10.0 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 4270 | 130 | 92 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 116% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (10-12.5)91511 | | |
| Lab Sample ID: | MC3639-5 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 88.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31213.D | 5 | 09/29/11 | KD | 09/17/11 | OP26286 | GBG1113 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.2 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 3360 | 93 | 70 | mg/kg | |
| | TPH (> C28-C40) | 124 | 93 | 70 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 83% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (30-31)91511 | | |
| Lab Sample ID: | MC3639-6 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 95.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K54934.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.41 g | 10.0 ml | 20.0 ul |
| Run #2 | | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 3000 | 700 | ug/kg | |
| 107-02-8 | Acrolein | ND | 15000 | 10000 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 3000 | 1200 | ug/kg | |
| 71-43-2 | Benzene | ND | 300 | 76 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 3000 | 120 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 3000 | 630 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 1200 | 130 | ug/kg | |
| 75-25-2 | Bromoform | ND | 1200 | 290 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 1200 | 410 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 3000 | 720 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 5450 | 3000 | 770 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 2010 | 3000 | 100 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 3000 | 400 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 3000 | 590 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 1200 | 140 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 1200 | 57 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 3000 | 160 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 3000 | 3000 | ug/kg | |
| 67-66-3 | Chloroform | ND | 1200 | 90 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 3000 | 130 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 3000 | 85 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 3000 | 680 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 3000 | 3000 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 1200 | 400 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 1200 | 120 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1200 | 91 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1200 | 88 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1200 | 85 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 1200 | 210 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1200 | 92 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1200 | 88 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1200 | 190 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.6

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (30-31)91511 | | |
| Lab Sample ID: | MC3639-6 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 95.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1200 | 160 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1200 | 150 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 1200 | 140 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 3000 | 700 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 3000 | 110 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 3000 | 120 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1200 | 610 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1200 | 420 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 15000 | 15000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 3000 | 1900 | ug/kg | |
| 100-41-4 | Ethylbenzene | 26700 | 1200 | 79 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 3000 | 3000 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 3000 | 640 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 6050 | 3000 | 96 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | 2560 | 3000 | 98 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1200 | 380 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 3000 | 510 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 3000 | 190 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 1200 | 220 | ug/kg | |
| 91-20-3 | Naphthalene | 10900 | 3000 | 3000 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 9000 | 3000 | 98 | ug/kg | |
| 100-42-5 | Styrene | ND | 3000 | 300 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 3000 | 610 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1200 | 110 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 1200 | 100 | ug/kg | |
| 108-88-3 | Toluene | ND | 3000 | 110 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 3000 | 670 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 3000 | 3000 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1200 | 110 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1200 | 150 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 1200 | 120 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 1200 | 560 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 3000 | 130 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 40800 | 3000 | 96 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 9580 | 3000 | 110 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 3000 | 710 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 1200 | 390 | ug/kg | UJ |
| | m,p-Xylene | 13500 | 1200 | 150 | ug/kg | |
| 95-47-6 | o-Xylene | 1080 | 1200 | 110 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 14500 | 1200 | 76 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (30-31)91511 | | |
| Lab Sample ID: | MC3639-6 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 95.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 107% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 114% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (30-31)91511 | | |
| Lab Sample ID: | MC3639-6 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8015 | Percent Solids: | 95.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24034.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.40 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 2020 | 12 | 8.8 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 83% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP39 (30-31)91511 | | |
| Lab Sample ID: | MC3639-6 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 95.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31110.D | 1 | 09/25/11 | KD | 09/17/11 | OP26286 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.4 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 884 | 17 | 13 | mg/kg | |
| | TPH (> C28-C40) | 66.3 | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 75% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | TB091511 | | |
| Lab Sample ID: | MC3639-7 | Date Sampled: | 09/15/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M43618.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB091511 | | |
| Lab Sample ID: | MC3639-7 | Date Sampled: | 09/15/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | TB091511 | | |
| Lab Sample ID: | MC3639-7 | Date Sampled: | 09/15/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 87% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 92% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES

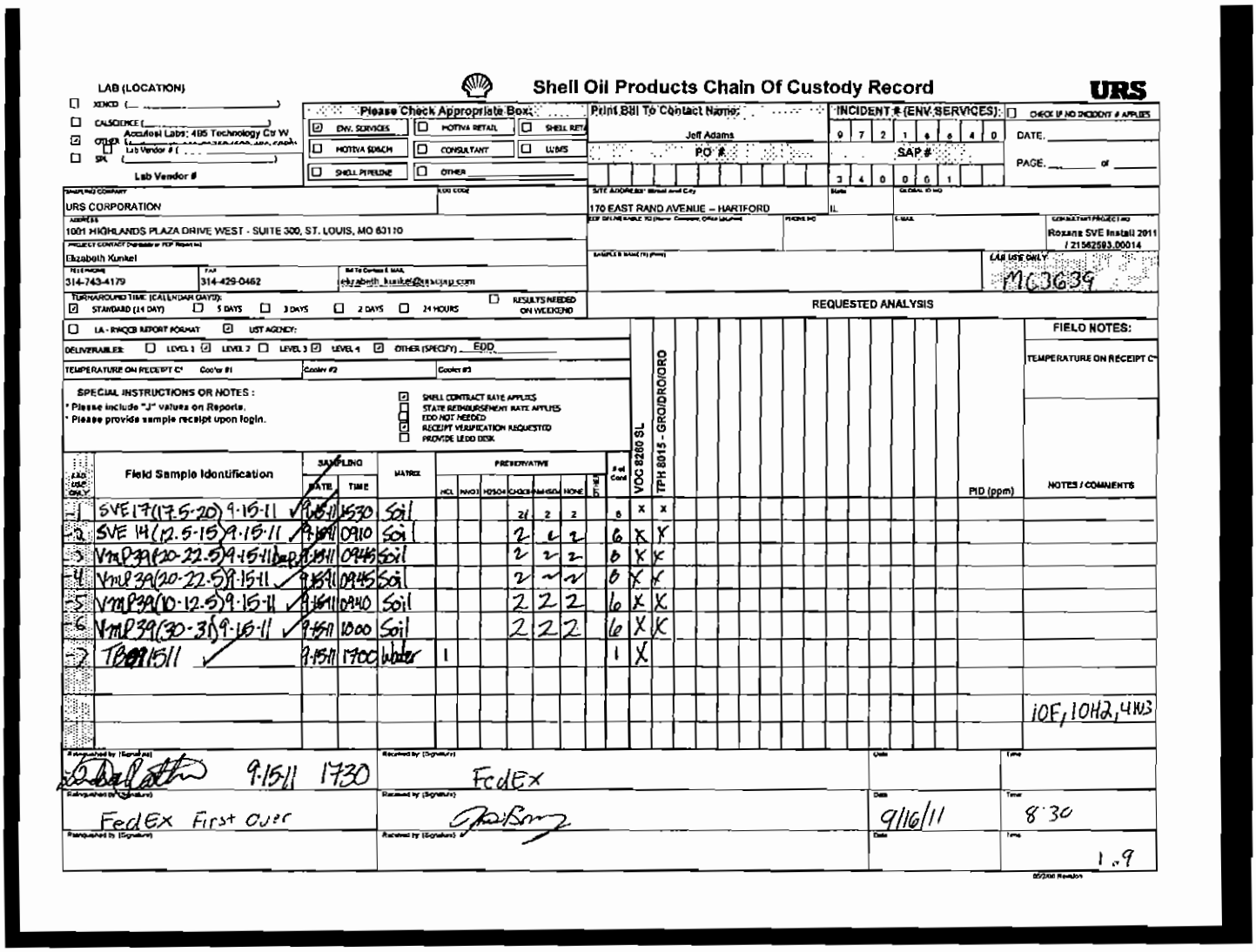


## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



LAB (LOCATION)
☐ XENCO (_____)
☐ CALSCIENCE (_____)
☑ OTHER Accutest Labs: 495 Technology Ctr W
☐ SPL (_____)
Lab Vendor #

**Shell Oil Products Chain Of Custody Record**

URS

Please Check Appropriate Box:
☑ ENV. SERVICES ☐ MOTIVA RETAIL ☐ SHELL RETA
☐ MOTIVA SR&CM ☐ CONSULTANT ☐ LUBES
☐ SHELL PIPELINE ☐ OTHER

Print Bill To Contact Name: Jeff Adams
PO #
INCIDENT # (ENV. SERVICES): 9 7 2 1 6 8 4 0 ☐ CHECK IF NO INCIDENT # APPLIES
SAP # 3 4 0 0 0 6 1
DATE:
PAGE: ___ of ___

SAMPLING COMPANY: URS CORPORATION
LOC CODE:
ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110
PROJECT CONTACT (Hardcopy or PDF Report to): Elizabeth Kunkel
TELEPHONE: 314-743-4179
FAX: 314-429-0462
Bill To Contact E-MAIL: elizabeth.kunkel@aecom.com
SITE ADDRESS (Street and City): 170 EAST RAND AVENUE – HARTFORD
State: IL
GLOBAL ID NO.
E-MAIL
CONSULTANT PROJECT NO.: Roxana SVE Install 2011 / 21562593.00014
SAMPLER'S NAME (Print):
LAB USE ONLY: MC3639

TURNAROUND TIME (CALENDAR DAYS):
☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

REQUESTED ANALYSIS

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY:
DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD
TEMPERATURE ON RECEIPT C° Cooler #1 Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES :
* Please include "J" values on Reports.
* Please provide sample receipt upon login.

☑ SHELL CONTRACT RATE APPLIES
☐ STATE REIMBURSEMENT RATE APPLIES
☐ EDD NOT NEEDED
☑ RECEIPT VERIFICATION REQUESTED
☐ PROVIDE EDD DESK

FIELD NOTES:
TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE HCL | HNO3 | H2SO4 | CHILL | NaHSO4 | NONE | # of Cont | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | SVE17(17.5-20) 9-15-11 | 9-15-11 | 1530 | Soil | | | | 2 | 2 | 2 | 6 | X | X | | |
| -2 | SVE 14(12.5-15) 9-15-11 | 9-15-11 | 0910 | Soil | | | | 2 | 2 | 2 | 6 | X | X | | |
| -3 | VMP39(20-22.5) 9-15-11 | 9-15-11 | 0945 | Soil | | | | 2 | 2 | 2 | 6 | X | X | | |
| -4 | VMP39(20-22.5) 9-15-11 | 9-15-11 | 0945 | Soil | | | | 2 | 2 | 2 | 6 | X | X | | |
| -5 | VMP39(10-12.5) 9-15-11 | 9-15-11 | 0940 | Soil | | | | 2 | 2 | 2 | 6 | X | X | | |
| -6 | VMP39(30-35) 9-15-11 | 9-15-11 | 1000 | Soil | | | | 2 | 2 | 2 | 6 | X | X | | |
| -7 | TB 9-15-11 | 9-15-11 | 1700 | Water | 1 | | | | | | 1 | X | | | |
| | | | | | | | | | | | | | | | 10F, 10H2, 4N3 |

Relinquished by (Signature): 9-15-11 1730
Received by (Signature): FedEx
Relinquished by (Signature): FedEx First Over
Received by (Signature): 9/16/11 8:30
Relinquished by (Signature):
Received by (Signature): 1.9

85/200 Revision

MC3639: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC3639 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 9/16/2011 Delivery Method: Client Service Action Required at Login: No

Project: 170 EAST RAND AVE HARTFORD IL No. Coolers: 1 Airbill #'s: N/A

| Cooler Security | Y | or | N | | Y | or | N |
|---|---|---|---|---|---|---|---|
| 1. Custody Seals Present: | ☑ | | ☐ | 3. COC Present: | ☑ | | ☐ |
| 2. Custody Seals Intact: | ☑ | | ☐ | 4. Smpl Dates/Time OK | ☑ | | ☐ |

| Cooler Temperature | Y | or | N |
|---|---|---|---|
| 1. Temp criteria achieved: | ☑ | | ☐ |
| 2. Cooler temp verification: | Infared gun | | |
| 3. Cooler media: | Ice (bag) | | |

| Quality Control Preservatio | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Trip Blank present / cooler: | ☑ | | ☐ | ☐ |
| 2. Trip Blank listed on COC: | ☑ | | ☐ | ☐ |
| 3. Samples preserved properly: | ☑ | | ☐ | |
| 4. VOCs headspace free: | ☑ | | ☐ | ☐ |

| Sample Integrity - Documentation | Y | or | N |
|---|---|---|---|
| 1. Sample labels present on bottles: | ☑ | | ☐ |
| 2. Container labeling complete: | ☑ | | ☐ |
| 3. Sample container label / COC agree: | ☑ | | ☐ |

| Sample Integrity - Condition | Y | or | N |
|---|---|---|---|
| 1. Sample recvd within HT: | ☑ | | ☐ |
| 2. All containers accounted for: | ☑ | | ☐ |
| 3. Condition of sample: | Intact | | |

| Sample Integrity - Instructions | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Analysis requested is clear: | ☑ | | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | | ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ | | ☐ | |
| 4. Compositing instructions clear: | ☐ | | ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ | | ☐ | ☑ |

Comments



4.1

4

**MC3639: Chain of Custody**
**Page 2 of 2**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3639

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3639-1 Collected: 15-SEP-11 15:30 By: LR SVE17 (17.5-20)91511 | | | Received: 16-SEP-11 By: JB | | | |
| MC3639-1 | SM21 2540 B MOD. | 20-SEP-11 | HS | | | %SOL |
| MC3639-1 | SW846 8015 | 21-SEP-11 19:56 | WS | | | V8015GRO |
| MC3639-1 | SW846-8015 | 25-SEP-11 08:46 | KD | 17-SEP-11 | FC | B8015DROORO |
| MC3639-1 | SW846 8260B | 27-SEP-11 11:26 | AMY | | | V8260SL |
| MC3639-2 Collected: 15-SEP-11 09:10 By: LR SVE14 (12.5-15)91511 | | | Received: 16-SEP-11 By: JB | | | |
| MC3639-2 | SM21 2540 B MOD. | 20-SEP-11 | HS | | | %SOL |
| MC3639-2 | SW846 8260B | 21-SEP-11 15:53 | GK | | | V8260SL |
| MC3639-2 | SW846 8015 | 21-SEP-11 20:36 | WS | | | V8015GRO |
| MC3639-2 | SW846-8015 | 25-SEP-11 18:47 | KD | 17-SEP-11 | FC | B8015DROORO |
| MC3639-3 Collected: 15-SEP-11 09:45 By: LR VMP39 (20-22.5)91511 DUP | | | Received: 16-SEP-11 By: JB | | | |
| MC3639-3 | SM21 2540 B MOD. | 20-SEP-11 | HS | | | %SOL |
| MC3639-3 | SW846 8260B | 21-SEP-11 14:57 | GK | | | V8260SL |
| MC3639-3 | SW846 8015 | 21-SEP-11 21:16 | WS | | | V8015GRO |
| MC3639-3 | SW846-8015 | 25-SEP-11 05:41 | KD | 17-SEP-11 | FC | B8015DROORO |
| MC3639-4 Collected: 15-SEP-11 09:45 By: LR VMP39 (20-22.5)91511 | | | Received: 16-SEP-11 By: JB | | | |
| MC3639-4 | SM21 2540 B MOD. | 20-SEP-11 | HS | | | %SOL |
| MC3639-4 | SW846 8260B | 21-SEP-11 15:25 | GK | | | V8260SL |
| MC3639-4 | SW846 8015 | 21-SEP-11 21:56 | WS | | | V8015GRO |
| MC3639-4 | SW846-8015 | 25-SEP-11 04:54 | KD | 17-SEP-11 | FC | B8015DROORO |
| MC3639-5 Collected: 15-SEP-11 09:40 By: LR VMP39 (10-12.5)91511 | | | Received: 16-SEP-11 By: JB | | | |
| MC3639-5 | SM21 2540 B MOD. | 20-SEP-11 | HS | | | %SOL |
| MC3639-5 | SW846 8260B | 21-SEP-11 16:20 | GK | | | V8260SL |
| MC3639-5 | SW846 8015 | 21-SEP-11 22:36 | WS | | | V8015GRO |
| MC3639-5 | SW846-8015 | 29-SEP-11 11:02 | KD | 17-SEP-11 | FC | B8015DROORO |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3639

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3639-6 | Collected: 15-SEP-11 10:00 By: LR | | Received: 16-SEP-11 By: JB | | | |
| VMP39 (30-31)91511 | | | | | | |
| MC3639-6 | SM21 2540 B MOD. | 20-SEP-11 | HS | | | %SOL |
| MC3639-6 | SW846 8260B | 21-SEP-11 16:47 | GK | | | V8260SL |
| MC3639-6 | SW846 8015 | 21-SEP-11 23:16 | WS | | | V8015GRO |
| MC3639-6 | SW846-8015 | 25-SEP-11 18:01 | KD | 17-SEP-11 | FC | B8015DROORO |
| MC3639-7 | Collected: 15-SEP-11 17:00 By: LR | | Received: 16-SEP-11 By: JB | | | |
| TB091511 | | | | | | |
| MC3639-7 | SW846 8260B | 27-SEP-11 22:09 | TD | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/16/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3639-1.1 | Walk In Ref #9 | Bijan Jafari | 09/17/11 06:31 | Retrieve from Storage |
| MC3639-1.1 | Bijan Jafari | Walk In Ref #9 | 09/20/11 10:07 | Return to Storage |
| MC3639-1.1 | Walk In Ref #9 | Hamid Siamak | 09/20/11 10:26 | Retrieve from Storage |
| MC3639-1.1 | Hamid Siamak | Walk In Ref #9 | 09/20/11 12:51 | Return to Storage |
| MC3639-1.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3639-1.3 | VOC Ref #10 | Amy Min Yang | 09/27/11 10:04 | Retrieve from Storage |
| MC3639-1.3 | Amy Min Yang | GCMSV | 09/27/11 10:04 | Load on Instrument |
| MC3639-1.3 | GCMSV | Amy Min Yang | 10/04/11 17:33 | Unload from Instrument |
| MC3639-1.3 | Amy Min Yang | VOC Ref #10 | 10/04/11 17:33 | Return to Storage |
| MC3639-1.3 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3639-1.5 | VOC Ref #10 | William Shao | 09/21/11 09:00 | Retrieve from Storage |
| MC3639-1.5 | William Shao | GCBH | 09/21/11 09:00 | Load on Instrument |
| MC3639-1.5 | GCBH | William Shao | 09/21/11 09:00 | Unload from Instrument |
| MC3639-1.5 | William Shao | VOC Ref #10 | 09/21/11 09:00 | Return to Storage |
| MC3639-1.5 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3639-1.6 | VOC Ref #10 | Gary Krasinski | 09/20/11 15:50 | Retrieve from Storage |
| MC3639-1.6 | Gary Krasinski | VOC Ref #10 | 09/21/11 11:41 | Return to Storage |
| MC3639-1.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3639-2.1 | Walk In Ref #9 | Bijan Jafari | 09/17/11 06:31 | Retrieve from Storage |
| MC3639-2.1 | Bijan Jafari | Walk In Ref #9 | 09/20/11 10:07 | Return to Storage |
| MC3639-2.1 | Walk In Ref #9 | Hamid Siamak | 09/20/11 10:26 | Retrieve from Storage |
| MC3639-2.1 | Hamid Siamak | Walk In Ref #9 | 09/20/11 12:51 | Return to Storage |
| MC3639-2.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3639-2.5 | VOC Ref #10 | Gary Krasinski | 09/20/11 15:50 | Retrieve from Storage |
| MC3639-2.5 | Gary Krasinski | VOC Ref #10 | 09/22/11 11:43 | Return to Storage |
| MC3639-2.5 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3639-2.6 | VOC Ref #10 | William Shao | 09/21/11 09:00 | Retrieve from Storage |
| MC3639-2.6 | William Shao | GCBH | 09/21/11 09:00 | Load on Instrument |
| MC3639-2.6 | GCBH | William Shao | 09/21/11 09:00 | Unload from Instrument |
| MC3639-2.6 | William Shao | VOC Ref #10 | 09/21/11 09:00 | Return to Storage |
| MC3639-2.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3639-3.1 | Walk In Ref #9 | Bijan Jafari | 09/17/11 06:31 | Retrieve from Storage |
| MC3639-3.1 | Bijan Jafari | Walk In Ref #9 | 09/20/11 10:07 | Return to Storage |
| MC3639-3.1 | Walk In Ref #9 | Hamid Siamak | 09/20/11 10:26 | Retrieve from Storage |
| MC3639-3.1 | Hamid Siamak | Walk In Ref #9 | 09/20/11 12:51 | Return to Storage |
| MC3639-3.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |

# Accutest Internal Chain of Custody



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/16/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3639-3.5 | VOC Ref #10 | William Shao | 09/21/11 09:00 | Retrieve from Storage |
| MC3639-3.5 | William Shao | GCBH | 09/21/11 09:00 | Load on Instrument |
| MC3639-3.5 | GCBH | William Shao | 09/21/11 09:00 | Unload from Instrument |
| MC3639-3.5 | William Shao | VOC Ref #10 | 09/21/11 09:00 | Return to Storage |
| MC3639-3.5 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3639-3.6 | VOC Ref #10 | Gary Krasinski | 09/20/11 15:50 | Retrieve from Storage |
| MC3639-3.6 | Gary Krasinski | VOC Ref #10 | 09/22/11 11:43 | Return to Storage |
| MC3639-3.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3639-4.1 | Walk In Ref #9 | Bijan Jafari | 09/17/11 06:31 | Retrieve from Storage |
| MC3639-4.1 | Bijan Jafari | Walk In Ref #9 | 09/20/11 10:07 | Return to Storage |
| MC3639-4.1 | Walk In Ref #9 | Hamid Siamak | 09/20/11 10:26 | Retrieve from Storage |
| MC3639-4.1 | Hamid Siamak | Walk In Ref #9 | 09/20/11 12:51 | Return to Storage |
| MC3639-4.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3639-4.5 | VOC Ref #10 | Gary Krasinski | 09/20/11 15:50 | Retrieve from Storage |
| MC3639-4.5 | Gary Krasinski | VOC Ref #10 | 09/22/11 11:43 | Return to Storage |
| MC3639-4.5 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3639-4.6 | VOC Ref #10 | William Shao | 09/21/11 09:00 | Retrieve from Storage |
| MC3639-4.6 | William Shao | GCBH | 09/21/11 09:00 | Load on Instrument |
| MC3639-4.6 | GCBH | William Shao | 09/21/11 09:00 | Unload from Instrument |
| MC3639-4.6 | William Shao | VOC Ref #10 | 09/21/11 09:00 | Return to Storage |
| MC3639-4.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3639-5.1 | Walk In Ref #9 | Bijan Jafari | 09/17/11 06:31 | Retrieve from Storage |
| MC3639-5.1 | Bijan Jafari | Walk In Ref #9 | 09/20/11 10:07 | Return to Storage |
| MC3639-5.1 | Walk In Ref #9 | Hamid Siamak | 09/20/11 10:26 | Retrieve from Storage |
| MC3639-5.1 | Hamid Siamak | Walk In Ref #9 | 09/20/11 12:51 | Return to Storage |
| MC3639-5.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3639-5.5 | VOC Ref #10 | Gary Krasinski | 09/20/11 15:50 | Retrieve from Storage |
| MC3639-5.5 | Gary Krasinski | VOC Ref #10 | 09/22/11 11:43 | Return to Storage |
| MC3639-5.5 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3639-5.6 | VOC Ref #10 | William Shao | 09/21/11 09:00 | Retrieve from Storage |
| MC3639-5.6 | William Shao | GCBH | 09/21/11 09:00 | Load on Instrument |
| MC3639-5.6 | GCBH | William Shao | 09/21/11 09:00 | Unload from Instrument |
| MC3639-5.6 | William Shao | VOC Ref #10 | 09/21/11 09:00 | Return to Storage |
| MC3639-5.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3639-6.1 | Walk In Ref #9 | Bijan Jafari | 09/17/11 06:31 | Retrieve from Storage |
| MC3639-6.1 | Bijan Jafari | Walk In Ref #9 | 09/20/11 10:07 | Return to Storage |

# Accutest Internal Chain of Custody



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/16/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3639-6.1 | Walk In Ref #9 | Hamid Siamak | 09/20/11 10:26 | Retrieve from Storage |
| MC3639-6.1 | Hamid Siamak | Walk In Ref #9 | 09/20/11 12:51 | Return to Storage |
| MC3639-6.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3639-6.5 | VOC Ref #10 | William Shao | 09/21/11 09:00 | Retrieve from Storage |
| MC3639-6.5 | William Shao | GCBH | 09/21/11 09:00 | Load on Instrument |
| MC3639-6.5 | GCBH | William Shao | 09/21/11 09:00 | Unload from Instrument |
| MC3639-6.5 | William Shao | VOC Ref #10 | 09/21/11 09:00 | Return to Storage |
| MC3639-6.5 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3639-6.6 | VOC Ref #10 | Gary Krasinski | 09/20/11 15:50 | Retrieve from Storage |
| MC3639-6.6 | Gary Krasinski | VOC Ref #10 | 09/22/11 11:43 | Return to Storage |
| MC3639-6.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3639-7.1 | VOC Ref #4 | Jugal Patel | 09/28/11 16:20 | Retrieve from Storage |
| MC3639-7.1 | Jugal Patel | GCMSM | 09/28/11 16:20 | Load on Instrument |
| MC3639-7.1 | GCMSM | Jugal Patel | 09/28/11 16:21 | Unload from Instrument |
| MC3639-7.1 | Jugal Patel | VOC Ref #4 | 09/28/11 16:21 | Return to Storage |
| MC3639-7.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |

New England ACCUTEST LABORATORIES



## GC/MS Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1835-MB | K54928.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-2, MC3639-3, MC3639-4, MC3639-5, MC3639-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 58 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 850 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 250 | 100 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 6.3 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 9.5 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 52 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 10 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 24 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 34 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 59 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 63 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 8.3 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 33 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 48 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 11 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 4.7 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 13 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 250 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 7.4 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 11 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 7.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 56 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 250 | 250 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 33 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 100 | 9.6 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 7.5 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 7.2 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 7.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 17 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 7.6 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 7.3 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 16 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 13 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 11 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 58 | ug/kg | |

# Method Blank Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1835-MB | K54928.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-2, MC3639-3, MC3639-4, MC3639-5, MC3639-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 9.2 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 9.6 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 50 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 34 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 160 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 6.5 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 250 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 52 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 7.9 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.1 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 31 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 42 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 15 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 18 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 250 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 8.1 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 25 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 8.8 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 8.4 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 9.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 55 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 250 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 9.2 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 13 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 9.8 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 46 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 10 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 7.9 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 9.1 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 59 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 32 | ug/kg | |
| | m,p-Xylene | ND | 100 | 13 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 9.2 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 6.3 | ug/kg | |

# Method Blank Summary

Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1835-MB | K54928.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-2, MC3639-3, MC3639-4, MC3639-5, MC3639-6

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 102% | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 106% | 70-130% |

# Method Blank Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-MB | V2121.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary

Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-MB | V2121.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-MB | V212I.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-1

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

# Method Blank Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1403-MB | M43599.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-7

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |

# Method Blank Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1403-MB | M43599.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-7

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

# Method Blank Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1403-MB | M43599.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-7

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 88% | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

# Blank Spike Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-BS | V2120.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-1

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 51.7 | 103 | 70-130 |
| 107-02-8 | Acrolein | 250 | 935 | 374* [a] | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 322 | 644* [a] | 70-130 |
| 71-43-2 | Benzene | 50 | 55.4 | 111 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 50.4 | 101 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 51.6 | 103 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 52.2 | 104 | 70-130 |
| 75-25-2 | Bromoform | 50 | 47.5 | 95 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 49.5 | 99 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 57.9 | 116 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 61.2 | 122 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 55.1 | 110 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 52.8 | 106 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 48.6 | 97 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 49.1 | 98 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 57.5 | 115 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 56.9 | 114 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 19.1 | 38 | 10-160 |
| 67-66-3 | Chloroform | 50 | 53.5 | 107 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 48.2 | 96 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 51.5 | 103 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 53.0 | 106 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 48.9 | 98 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 51.6 | 103 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 53.0 | 106 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 56.4 | 113 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 52.7 | 105 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 51.9 | 104 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 51.2 | 102 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 57.1 | 114 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 53.2 | 106 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 55.1 | 110 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 52.2 | 104 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 52.6 | 105 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 54.0 | 108 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 52.4 | 105 | 70-130 |

# Blank Spike Summary

Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-BS | V2120.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-1

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 55.4 | 111 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 52.1 | 104 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 54.3 | 109 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 57.4 | 115 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 254 | 102 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 55.6 | 111 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 57.4 | 115 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 54.6 | 109 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 60.5 | 121 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 62.6 | 125 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 57.6 | 115 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 52.5 | 105 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 61.1 | 122 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 53.6 | 107 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 58.8 | 118 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 57.3 | 115 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 54.5 | 109 | 70-130 |
| 100-42-5 | Styrene | 50 | 56.6 | 113 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 53.8 | 108 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 55.9 | 112 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 52.5 | 105 | 70-130 |
| 108-88-3 | Toluene | 50 | 52.0 | 104 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 55.7 | 111 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 58.6 | 117 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 49.8 | 100 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 52.3 | 105 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 50.7 | 101 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 45.6 | 91 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 54.8 | 110 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 52.6 | 105 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 52.8 | 106 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 44.3 | 89 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 41.9 | 84 | 70-130 |
| | m,p-Xylene | 100 | 116 | 116 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 56.4 | 113 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 173 | 115 | 70-130 |

# Blank Spike Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-BS | V2120.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-1

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1835-BS | K54925.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |
| MSK1835-BSD | K54926.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-2, MC3639-3, MC3639-4, MC3639-5, MC3639-6

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 2200 | 88 | 2410 | 96 | 9 | 70-130/25 |
| 107-02-8 | Acrolein | 12500 | 9510 | 76 | 9320 | 75 | 2 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 2500 | 2390 | 96 | 2550 | 102 | 6 | 70-130/25 |
| 71-43-2 | Benzene | 2500 | 2360 | 94 | 2360 | 94 | 0 | 70-130/25 |
| 108-86-1 | Bromobenzene | 2500 | 2460 | 98 | 2420 | 97 | 2 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 2500 | 2390 | 96 | 2420 | 97 | 1 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 2500 | 2460 | 98 | 2490 | 100 | 1 | 70-130/25 |
| 75-25-2 | Bromoform | 2500 | 2620 | 105 | 2670 | 107 | 2 | 70-130/25 |
| 74-83-9 | Bromomethane | 2500 | 2090 | 84 | 2010 | 80 | 4 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 2410 | 96 | 2610 | 104 | 8 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 2500 | 2600 | 104 | 2570 | 103 | 1 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2520 | 101 | 2480 | 99 | 2 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2440 | 98 | 2440 | 98 | 0 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 2500 | 2260 | 90 | 2260 | 90 | 0 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2370 | 95 | 2350 | 94 | 1 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 2500 | 2570 | 103 | 2530 | 101 | 2 | 70-130/25 |
| 75-00-3 | Chloroethane | 2500 | 2280 | 91 | 2210 | 88 | 3 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 2140 | 86 | 2300 | 92 | 7 | 10-160/25 |
| 67-66-3 | Chloroform | 2500 | 2410 | 96 | 2380 | 95 | 1 | 70-130/25 |
| 74-87-3 | Chloromethane | 2500 | 1920 | 77 | 1900 | 76 | 1 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2390 | 96 | 2360 | 94 | 1 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2480 | 99 | 2440 | 98 | 2 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 2500 | 2100 | 84 | 2280 | 91 | 8 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 2500 | 2680 | 107 | 2690 | 108 | 0 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 2500 | 2570 | 103 | 2600 | 104 | 1 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2530 | 101 | 2490 | 100 | 2 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2490 | 100 | 2460 | 98 | 1 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2530 | 101 | 2450 | 98 | 3 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 1850 | 74 | 1820 | 73 | 2 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2360 | 94 | 2350 | 94 | 0 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2300 | 92 | 2310 | 92 | 0 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2400 | 96 | 2380 | 95 | 1 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2320 | 93 | 2310 | 92 | 0 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2300 | 92 | 2370 | 95 | 3 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2410 | 96 | 2410 | 96 | 0 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2480 | 99 | 2500 | 100 | 1 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1835-BS | K54925.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |
| MSK1835-BSD | K54926.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-2, MC3639-3, MC3639-4, MC3639-5, MC3639-6

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2730 | 109 | 2620 | 105 | 4 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2380 | 95 | 2430 | 97 | 2 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2490 | 100 | 2480 | 99 | 0 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2670 | 107 | 2720 | 109 | 2 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 12500 | 11700 | 94 | 13400 | 107 | 14 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2470 | 99 | 2650 | 106 | 7 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 2500 | 2610 | 104 | 2530 | 101 | 3 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2540 | 102 | 2520 | 101 | 1 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 2500 | 2490 | 100 | 2750 | 110 | 10 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 2500 | 2840 | 114 | 2810 | 112 | 1 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2590 | 104 | 2530 | 101 | 2 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2360 | 94 | 2410 | 96 | 2 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 2440 | 98 | 2670 | 107 | 9 | 70-130/25 |
| 74-95-3 | Methylene bromide | 2500 | 2420 | 97 | 2440 | 98 | 1 | 70-130/25 |
| 75-09-2 | Methylene chloride | 2500 | 2440 | 98 | 2420 | 97 | 1 | 70-130/25 |
| 91-20-3 | Naphthalene | 2500 | 2260 | 90 | 2480 | 99 | 9 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 2500 | 2490 | 100 | 2470 | 99 | 1 | 70-130/25 |
| 100-42-5 | Styrene | 2500 | 2680 | 107 | 2660 | 106 | 1 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2610 | 104 | 2570 | 103 | 2 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2480 | 99 | 2580 | 103 | 4 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 2500 | 2550 | 102 | 2520 | 101 | 1 | 70-130/25 |
| 108-88-3 | Toluene | 2500 | 2420 | 97 | 2420 | 97 | 0 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 2260 | 90 | 2380 | 95 | 5 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2410 | 96 | 2470 | 99 | 2 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2410 | 96 | 2380 | 95 | 1 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2470 | 99 | 2490 | 100 | 1 | 70-130/25 |
| 79-01-6 | Trichloroethene | 2500 | 2410 | 96 | 2420 | 97 | 0 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2250 | 90 | 2210 | 88 | 2 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2450 | 98 | 2550 | 102 | 4 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2460 | 98 | 2400 | 96 | 2 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2420 | 97 | 2370 | 95 | 2 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 2500 | 1780 | 71 | 1840 | 74 | 3 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 2500 | 1690 | 68* a | 1570 | 63* a | 7 | 70-130/25 |
| | m,p-Xylene | 5000 | 5210 | 104 | 5140 | 103 | 1 | 70-130/25 |
| 95-47-6 | o-Xylene | 2500 | 2590 | 104 | 2530 | 101 | 2 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 7500 | 7800 | 104 | 7660 | 102 | 2 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1835-BS | K54925.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |
| MSK1835-BSD | K54926.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-2, MC3639-3, MC3639-4, MC3639-5, MC3639-6

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 102% | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 105% | 104% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | 99% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1403-BS | M43597.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| MSM1403-BSD | M43598.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-7

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 69.6 | 139* a | 53.2 | 106 | 27* a | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 249 | 100 | 180 | 72 | 32* a | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 197 | 394* b | 219 | 438* b | 11 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 50.7 | 101 | 50.9 | 102 | 0 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 55.6 | 111 | 56.6 | 113 | 2 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 53.5 | 107 | 53.0 | 106 | 1 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 57.2 | 114 | 53.3 | 107 | 7 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 58.6 | 117 | 54.6 | 109 | 7 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 46.7 | 93 | 44.1 | 88 | 6 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 53.7 | 107 | 54.6 | 109 | 2 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 56.3 | 113 | 56.9 | 114 | 1 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 55.8 | 112 | 57.5 | 115 | 3 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 53.2 | 106 | 55.5 | 111 | 4 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 46.7 | 93 | 43.8 | 88 | 6 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 62.4 | 125 | 60.4 | 121 | 3 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 58.2 | 116 | 56.7 | 113 | 3 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 47.6 | 95 | 44.7 | 89 | 6 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 29.5 | 59* a | 28.7 | 57* a | 3 | 70-130/25 |
| 67-66-3 | Chloroform | 50 | 52.0 | 104 | 50.2 | 100 | 4 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 36.6 | 73 | 35.6 | 71 | 3 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 48.8 | 98 | 52.5 | 105 | 7 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 51.3 | 103 | 53.5 | 107 | 4 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 45.5 | 91 | 47.3 | 95 | 4 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 68.5 | 137* a | 63.1 | 126 | 8 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 59.1 | 118 | 55.5 | 111 | 6 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 56.2 | 112 | 55.9 | 112 | 1 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 56.2 | 112 | 55.7 | 111 | 1 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 54.4 | 109 | 54.6 | 109 | 0 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 50.2 | 100 | 48.0 | 96 | 4 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 44.8 | 90 | 47.8 | 96 | 6 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 54.3 | 109 | 52.5 | 105 | 3 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 53.6 | 107 | 53.2 | 106 | 1 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 51.0 | 102 | 48.5 | 97 | 5 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 49.3 | 99 | 51.6 | 103 | 5 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 53.4 | 107 | 46.4 | 93 | 14 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 59.4 | 119 | 52.9 | 106 | 12 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1403-BS | M43597.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| MSM1403-BSD | M43598.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-7

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 58.8 | 118 | 56.5 | 113 | 4 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 56.5 | 113 | 54.3 | 109 | 4 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 51.8 | 104 | 50.2 | 100 | 3 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 57.1 | 114 | 54.6 | 109 | 4 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 213 | 85 | 192 | 77 | 10 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 52.2 | 104 | 48.8 | 98 | 7 | 77-137/25 |
| 100-41-4 | Ethylbenzene | 50 | 58.5 | 117 | 57.4 | 115 | 2 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 73.8 | 148* a | 73.2 | 146* a | 1 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 68.2 | 136* a | 52.4 | 105 | 26* a | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 58.1 | 116 | 63.1 | 126 | 8 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 58.0 | 116 | 58.6 | 117 | 1 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 43.9 | 88 | 43.4 | 87 | 1 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 47.7 | 95 | 45.7 | 91 | 4 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 55.5 | 111 | 49.7 | 99 | 11 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 50.0 | 100 | 49.2 | 98 | 2 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 51.0 | 102 | 48.9 | 98 | 4 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 50.7 | 101 | 54.4 | 109 | 7 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 58.2 | 116 | 56.6 | 113 | 3 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 61.8 | 124 | 60.1 | 120 | 3 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 41.6 | 83 | 48.0 | 96 | 14 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 70.2 | 140* a | 66.5 | 133* a | 5 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 58.8 | 118 | 56.4 | 113 | 4 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 57.2 | 114 | 57.2 | 114 | 0 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 60.7 | 121 | 60.4 | 121 | 0 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 56.4 | 113 | 54.1 | 108 | 4 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 56.1 | 112 | 54.8 | 110 | 2 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 57.7 | 115 | 52.2 | 104 | 10 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 55.1 | 110 | 52.6 | 105 | 5 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 42.4 | 85 | 47.0 | 94 | 10 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 51.4 | 103 | 52.6 | 105 | 2 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 50.0 | 100 | 53.0 | 106 | 6 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 27.6 | 55* a | 30.1 | 60* a | 9 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 34.6 | 69* a | 34.4 | 69* a | 1 | 70-130/25 |
|  | m,p-Xylene | 100 | 123 | 123 | 121 | 121 | 2 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 60.9 | 122 | 61.0 | 122 | 0 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 184 | 123 | 182 | 121 | 1 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1403-BS | M43597.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| MSM1403-BSD | M43598.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-7

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | 86% | 70-130% |
| 2037-26-5 | Toluene-D8 | 93% | 94% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 86% | 96% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3639-4MS | K54942.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |
| MC3639-4MSD | K54943.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |
| MC3639-4 | K54931.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-2, MC3639-3, MC3639-4, MC3639-5, MC3639-6

| CAS No. | Compound | MC3639-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 5400 | 5370 | 99 | 5110 | 95 | 5 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 27000 | 21700 | 80 | 22100 | 82 | 2 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 5400 | 5440 | 101 | 5130 | 95 | 6 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 5400 | 5370 | 99 | 5180 | 96 | 4 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 5400 | 5430 | 101 | 5340 | 99 | 2 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 5400 | 5300 | 98 | 5230 | 97 | 1 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 5400 | 5590 | 104 | 5320 | 99 | 5 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 5400 | 5820 | 108 | 5570 | 103 | 4 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 5400 | 4710 | 87 | 4510 | 84 | 4 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 5400 | 5830 | 108 | 5370 | 99 | 8 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | 182 | J | 5400 | 5940 | 107 | 5720 | 103 | 4 | 70-130/30 |
| 135-98-8 | sec-Butylbenzeue | 68.2 | J | 5400 | 5620 | 103 | 5480 | 100 | 3 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 5400 | 5520 | 102 | 5330 | 99 | 4 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 5400 | 5000 | 93 | 4810 | 89 | 4 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 5400 | 5350 | 99 | 5130 | 95 | 4 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 5400 | 5700 | 106 | 5590 | 104 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 5400 | 5050 | 94 | 4900 | 91 | 3 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 5400 | 4880 | 90 | 4670 | 86 | 4 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 5400 | 5430 | 101 | 5270 | 98 | 3 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 5400 | 4290 | 79 | 4200 | 78 | 2 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 5400 | 5310 | 98 | 5150 | 95 | 3 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 5400 | 5470 | 101 | 5380 | 100 | 2 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 5400 | 5140 | 95 | 4720 | 87 | 9 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 5400 | 5900 | 109 | 5690 | 105 | 4 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 5400 | 5760 | 107 | 5520 | 102 | 4 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 5400 | 5720 | 106 | 5460 | 101 | 5 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 5400 | 5570 | 103 | 5450 | 101 | 2 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 5400 | 5560 | 103 | 5460 | 101 | 2 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 5400 | 4150 | 77 | 3890 | 72 | 6 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 5400 | 5300 | 98 | 5240 | 97 | 1 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 5400 | 5350 | 99 | 5050 | 94 | 6 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 5400 | 5210 | 96 | 5020 | 93 | 4 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 5400 | 5150 | 95 | 5050 | 94 | 2 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 5400 | 5350 | 99 | 5160 | 96 | 4 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 5400 | 5420 | 100 | 5210 | 96 | 4 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 5400 | 5500 | 102 | 5380 | 100 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3639-4MS | K54942.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |
| MC3639-4MSD | K54943.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |
| MC3639-4 | K54931.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-2, MC3639-3, MC3639-4, MC3639-5, MC3639-6

| CAS No. | Compound | MC3639-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 5400 | 5750 | 106 | 5600 | 104 | 3 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 5400 | 5400 | 100 | 5190 | 96 | 4 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 5400 | 5620 | 104 | 5450 | 101 | 3 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 5400 | 5960 | 110 | 5820 | 108 | 2 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 27000 | 21600 | 80 | 20100 | 74 | 7 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 5400 | 5850 | 108 | 5610 | 104 | 4 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 299 | | 5400 | 6060 | 107 | 5920 | 104 | 2 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 5400 | 5830 | 108 | 5590 | 104 | 4 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 5400 | 6450 | 119 | 5890 | 109 | 9 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | 124 | J | 5400 | 6410 | 116 | 6260 | 114 | 2 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | 94.7 | J | 5400 | 5810 | 106 | 5680 | 103 | 2 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 5400 | 5330 | 99 | 5170 | 96 | 3 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 5400 | 5950 | 110 | 5460 | 101 | 9 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 5400 | 5460 | 101 | 5250 | 97 | 4 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 5400 | 5440 | 101 | 5370 | 99 | 1 | 70-130/30 |
| 91-20-3 | Naphthalene | 544 | | 5400 | 6230 | 105 | 5780 | 97 | 7 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 188 | J | 5400 | 5710 | 102 | 5520 | 99 | 3 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 5400 | 5960 | 110 | 5780 | 107 | 3 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 5400 | 5780 | 107 | 5630 | 104 | 3 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 5400 | 5470 | 101 | 5280 | 98 | 4 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 5400 | 5690 | 105 | 5460 | 101 | 4 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 5400 | 5520 | 102 | 5320 | 99 | 4 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 5400 | 5810 | 108 | 5460 | 101 | 6 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 5400 | 5800 | 107 | 5530 | 102 | 5 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 5400 | 5320 | 99 | 5160 | 96 | 3 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 5400 | 5590 | 104 | 5400 | 100 | 3 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 5400 | 5630 | 104 | 5350 | 99 | 5 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 5400 | 4930 | 91 | 4730 | 88 | 4 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 5400 | 5560 | 103 | 5160 | 96 | 7 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1110 | | 5400 | 6580 | 101 | 6380 | 98 | 3 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 225 | J | 5400 | 5560 | 99 | 5490 | 98 | 1 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 5400 | 2710 | 50* a | 2780 | 51* a | 3 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 5400 | 3990 | 74 | 4130 | 76 | 3 | 70-130/30 |
| | m,p-Xylene | 267 | | 10800 | 12000 | 109 | 11600 | 105 | 3 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 5400 | 5790 | 107 | 5640 | 104 | 3 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 267 | | 16200 | 17800 | 108 | 17200 | 105 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3639-4MS | K54942.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |
| MC3639-4MSD | K54943.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |
| MC3639-4 | K54931.D | 1 | 09/21/11 | GK | n/a | n/a | MSK1835 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-2, MC3639-3, MC3639-4, MC3639-5, MC3639-6

| CAS No. | Surrogate Recoveries | MS | MSD | MC3639-4 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 103% | 101% | 112% | 70-130% |
| 2037-26-5 | Toluene-D8 | 109% | 106% | 108% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 105% | 103% | 112% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3751-4MS | V2134.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4MSD | V2135.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4 | V2130.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-1

| CAS No. | Compound | MC3751-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 17.6 | | 128 | 112 | 74 | 123 | 79 | 9 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 638 | 1830 | 287* [a] | 1780 | 267* [a] | 3 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 128 | 695 | 545* [a] | 746 | 559* [a] | 7 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 128 | 126 | 99 | 134 | 100 | 6 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 128 | 115 | 90 | 123 | 92 | 7 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 128 | 123 | 96 | 133 | 100 | 8 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 128 | 119 | 93 | 129 | 97 | 8 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 128 | 130 | 102 | 141 | 106 | 8 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 128 | 103 | 81 | 111 | 83 | 7 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 128 | 180 | 141* [b] | 203 | 152* [b] | 12 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 128 | 134 | 105 | 143 | 107 | 6 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 128 | 121 | 95 | 129 | 97 | 6 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 128 | 115 | 90 | 124 | 93 | 8 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 128 | 104 | 82 | 112 | 84 | 7 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 128 | 103 | 81 | 110 | 82 | 7 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 128 | 128 | 100 | 137 | 103 | 7 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 128 | 121 | 95 | 129 | 97 | 6 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 128 | ND | 0* [b] | ND | 0* [b] | nc | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 128 | 118 | 93 | 129 | 97 | 9 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 128 | 109 | 85 | 117 | 88 | 7 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 128 | 114 | 89 | 121 | 91 | 6 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 128 | 117 | 92 | 124 | 93 | 6 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 128 | 166 | 130 | 181 | 136* [b] | 9 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 128 | 126 | 99 | 138 | 103 | 9 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 128 | 139 | 109 | 150 | 112 | 8 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 128 | 129 | 101 | 137 | 103 | 6 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 128 | 119 | 93 | 125 | 94 | 5 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 128 | 116 | 91 | 124 | 93 | 7 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 128 | 103 | 81 | 107 | 80 | 4 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 128 | 125 | 98 | 135 | 101 | 8 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 128 | 125 | 98 | 135 | 101 | 8 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 128 | 122 | 96 | 130 | 97 | 6 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 128 | 118 | 93 | 128 | 96 | 8 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 128 | 118 | 93 | 126 | 94 | 7 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 128 | 124 | 97 | 133 | 100 | 7 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 128 | 131 | 103 | 141 | 106 | 7 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3751-4MS | V2134.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4MSD | V2135.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4 | V2130.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-1

| CAS No. | Compound | MC3751-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 128 | 119 | 93 | 130 | 97 | 9 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 128 | 116 | 91 | 124 | 93 | 7 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 128 | 126 | 99 | 137 | 103 | 8 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 128 | 141 | 111 | 152 | 114 | 8 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 638 | 824 | 129 | 961 | 144* [b] | 15 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 128 | 161 | 126 | 173 | 130 | 7 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 2.9 | | 128 | 132 | 101 | 141 | 104 | 7 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 128 | 117 | 92 | 125 | 94 | 7 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 128 | 198 | 155* [b] | 218 | 163* [b] | 10 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 128 | 137 | 107 | 148 | 111 | 8 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 128 | 126 | 99 | 135 | 101 | 7 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 128 | 131 | 103 | 144 | 108 | 9 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 128 | 208 | 163* [b] | 225 | 169* [b] | 8 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 128 | 132 | 104 | 145 | 109 | 9 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 128 | 130 | 102 | 141 | 106 | 8 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 128 | 160 | 125 | 171 | 128 | 7 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 0.77 | J | 128 | 122 | 95 | 129 | 96 | 6 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 128 | 126 | 99 | 133 | 100 | 5 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 128 | 118 | 93 | 128 | 96 | 8 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 128 | 159 | 125 | 172 | 129 | 8 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 128 | 118 | 93 | 125 | 94 | 6 | 70-130/30 |
| 108-88-3 | Toluene | 7.7 | | 128 | 122 | 90 | 130 | 92 | 6 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 128 | 127 | 100 | 133 | 100 | 5 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 128 | 132 | 104 | 138 | 103 | 4 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 128 | 108 | 85 | 118 | 88 | 9 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 128 | 134 | 105 | 144 | 108 | 7 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 128 | 114 | 89 | 121 | 91 | 6 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 128 | 96.4 | 76 | 102 | 76 | 6 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 128 | 157 | 123 | 174 | 130 | 10 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 0.88 | J | 128 | 118 | 92 | 125 | 93 | 6 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 128 | 116 | 91 | 123 | 92 | 6 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 128 | 119 | 93 | 119 | 89 | 0 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 128 | 91.5 | 72 | 97.4 | 73 | 6 | 70-130/30 |
| | m,p-Xylene | ND | | 255 | 260 | 102 | 278 | 104 | 7 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 128 | 126 | 99 | 137 | 103 | 8 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 383 | 386 | 101 | 415 | 104 | 7 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3751-4MS | V2134.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4MSD | V2135.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4 | V2130.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-1

| CAS No. | Surrogate Recoveries | MS | MSD | MC3751-4 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | 99% | 92% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 97% | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | 97% | 95% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3779-8MS | M43611.D | 5 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| MC3779-8MSD | M43612.D | 5 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| MC3779-8 | M43610.D | 5 | 09/27/11 | TD | n/a | n/a | MSM1403 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-7

| CAS No. | Compound | MC3779-8 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 250 | 175 | 70 | 176 | 70 | 1 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 1250 | 2050 | 164* [a] | 2140 | 171* [a] | 4 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 250 | 1010 | 404* [a] | 971 | 388* [a] | 4 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 250 | 241 | 96 | 255 | 102 | 6 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 250 | 273 | 109 | 276 | 110 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 250 | 261 | 104 | 260 | 104 | 0 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 250 | 278 | 111 | 282 | 113 | 1 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 250 | 260 | 104 | 271 | 108 | 4 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 250 | 207 | 83 | 214 | 86 | 3 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 250 | 276 | 110 | 280 | 112 | 1 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 250 | 282 | 113 | 268 | 107 | 5 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 250 | 282 | 113 | 267 | 107 | 5 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 250 | 271 | 108 | 257 | 103 | 5 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 250 | 210 | 84 | 219 | 88 | 4 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 250 | 287 | 115 | 310 | 124 | 8 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 250 | 273 | 109 | 280 | 112 | 3 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 250 | 215 | 86 | 208 | 83 | 3 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 250 | 37.2 | 15* [b] | ND | 0* [b] | 200* [c] | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 250 | 250 | 100 | 248 | 99 | 1 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 250 | 168 | 67* [b] | 173 | 69* [b] | 3 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 250 | 256 | 102 | 241 | 96 | 6 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 250 | 261 | 104 | 251 | 100 | 4 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 250 | 238 | 95 | 212 | 85 | 12 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 250 | 294 | 118 | 299 | 120 | 2 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 250 | 255 | 102 | 283 | 113 | 10 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 250 | 275 | 110 | 271 | 108 | 1 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 250 | 274 | 110 | 271 | 108 | 1 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 250 | 265 | 106 | 261 | 104 | 2 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 250 | 227 | 91 | 239 | 96 | 5 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 250 | 214 | 86 | 230 | 92 | 7 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 250 | 256 | 102 | 267 | 107 | 4 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 250 | 252 | 101 | 258 | 103 | 2 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 250 | 250 | 100 | 240 | 96 | 4 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 250 | 254 | 102 | 238 | 95 | 7 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 250 | 255 | 102 | 262 | 105 | 3 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 250 | 249 | 100 | 273 | 109 | 9 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3779-8MS | M43611.D | 5 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| MC3779-8MSD | M43612.D | 5 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| MC3779-8 | M43610.D | 5 | 09/27/11 | TD | n/a | n/a | MSM1403 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-7

| CAS No. | Compound | MC3779-8 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 250 | 285 | 114 | 288 | 115 | 1 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 250 | 263 | 105 | 283 | 113 | 7 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 250 | 229 | 92 | 258 | 103 | 12 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 250 | 255 | 102 | 281 | 112 | 10 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 1250 | 957 | 77 | 1030 | 82 | 7 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 250 | 228 | 91 | 253 | 101 | 10 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 250 | 281 | 112 | 278 | 111 | 1 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 250 | 363 | 145* [b] | 382 | 153* [b] | 5 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 250 | 219 | 88 | 251 | 100 | 14 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 250 | 313 | 125 | 294 | 118 | 6 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 250 | 291 | 116 | 278 | 111 | 5 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | 401 | | 250 | 608 | 83 | 567 | 66* [b] | 7 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 250 | 217 | 87 | 243 | 97 | 11 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 250 | 259 | 104 | 273 | 109 | 5 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 250 | 237 | 95 | 226 | 90 | 5 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 250 | 252 | 101 | 250 | 100 | 1 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 250 | 268 | 107 | 252 | 101 | 6 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 250 | 269 | 108 | 270 | 108 | 0 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 250 | 296 | 118 | 294 | 118 | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 250 | 234 | 94 | 212 | 85 | 10 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 250 | 317 | 127 | 335 | 134* [b] | 6 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 250 | 270 | 108 | 289 | 116 | 7 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 250 | 281 | 112 | 292 | 117 | 4 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 250 | 298 | 119 | 311 | 124 | 4 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 250 | 269 | 108 | 273 | 109 | 1 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 250 | 245 | 98 | 277 | 111 | 12 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 250 | 273 | 109 | 284 | 114 | 4 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 250 | 254 | 102 | 264 | 106 | 4 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 250 | 228 | 91 | 208 | 83 | 9 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 250 | 260 | 104 | 249 | 100 | 4 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 250 | 262 | 105 | 246 | 98 | 6 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 250 | 137 | 55* [b] | 145 | 58* [b] | 6 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 250 | 173 | 69* [b] | 169 | 68* [b] | 2 | 70-130/30 |
| | m,p-Xylene | ND | | 500 | 589 | 118 | 579 | 116 | 2 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 250 | 298 | 119 | 283 | 113 | 5 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 750 | 887 | 118 | 862 | 115 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3779-8MS | M43611.D | 5 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| MC3779-8MSD | M43612.D | 5 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| MC3779-8 | M43610.D | 5 | 09/27/11 | TD | n/a | n/a | MSM1403 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3639-7

| CAS No. | Surrogate Recoveries | MS | MSD | MC3779-8 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 87% | 85% | 84% | 70-130% |
| 2037-26-5 | Toluene-D8 | 92% | 98% | 93% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 88% | 92% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(c) High RPD due to possible matrix interference and/or sample non-homogeneity.

# Volatile Internal Standard Area Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSK1835-CC1831 | Injection Date: | 09/21/11 |
| Lab File ID: | K54923.D | Injection Time: | 11:45 |
| Instrument ID: | GCMSK | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 280850 | 8.86 | 368474 | 9.71 | 177693 | 12.97 | 207468 | 15.53 | 98839 | 6.48 |
| Upper Limit [a] | 561700 | 9.36 | 736948 | 10.21 | 355386 | 13.47 | 414936 | 16.03 | 197678 | 6.98 |
| Lower Limit [b] | 140425 | 8.36 | 184237 | 9.21 | 88847 | 12.47 | 103734 | 15.03 | 49420 | 5.98 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSK1835-BS | 285663 | 8.86 | 381081 | 9.71 | 183909 | 12.97 | 216745 | 15.53 | 87724 | 6.48 |
| MSK1835-BSD | 299666 | 8.86 | 395901 | 9.71 | 194907 | 12.97 | 228236 | 15.53 | 109387 | 6.48 |
| MSK1835-MB | 302817 | 8.87 | 410163 | 9.72 | 191347 | 12.97 | 208849 | 15.53 | 96976 | 6.48 |
| ZZZZZZ | 295643 | 8.87 | 402279 | 9.72 | 187590 | 12.97 | 209277 | 15.53 | 91630 | 6.48 |
| MC3639-3 | 290326 | 8.86 | 392669 | 9.71 | 181037 | 12.97 | 212829 | 15.53 | 85689 | 6.48 |
| MC3639-4 | 294578 | 8.86 | 404767 | 9.71 | 186683 | 12.97 | 217495 | 15.53 | 89223 | 6.48 |
| MC3639-2 | 291146 | 8.86 | 396442 | 9.71 | 178661 | 12.97 | 204256 | 15.53 | 98041 | 6.48 |
| MC3639-5 | 286791 | 8.86 | 377133 | 9.71 | 177411 | 12.97 | 216359 | 15.53 | 95541 | 6.47 |
| MC3639-6 | 302753 | 8.86 | 406084 | 9.71 | 179648 | 12.97 | 216236 | 15.53 | 92799 | 6.47 |
| ZZZZZZ | 305016 | 8.86 | 415861 | 9.71 | 188336 | 12.97 | 222287 | 15.53 | 87944 | 6.49 |
| ZZZZZZ | 296445 | 8.86 | 403699 | 9.71 | 187280 | 12.97 | 210444 | 15.53 | 89190 | 6.48 |
| ZZZZZZ | 291784 | 8.86 | 401111 | 9.71 | 184919 | 12.97 | 209863 | 15.53 | 94648 | 6.48 |
| ZZZZZZ | 294634 | 8.87 | 398014 | 9.72 | 186174 | 12.97 | 207994 | 15.53 | 96369 | 6.48 |
| ZZZZZZ | 285653 | 8.86 | 393442 | 9.71 | 182145 | 12.97 | 202544 | 15.53 | 82541 | 6.48 |
| ZZZZZZ | 290282 | 8.87 | 394508 | 9.72 | 181347 | 12.97 | 209157 | 15.53 | 96761 | 6.48 |
| ZZZZZZ | 286012 | 8.86 | 394427 | 9.71 | 182844 | 12.97 | 208699 | 15.53 | 90828 | 6.50 |
| MC3639-4MS | 278986 | 8.86 | 365914 | 9.71 | 180367 | 12.97 | 213011 | 15.53 | 86507 | 6.48 |
| MC3639-4MSD | 285535 | 8.86 | 379774 | 9.71 | 185763 | 12.97 | 219725 | 15.53 | 78654 | 6.47 |
| ZZZZZZ | 300743 | 8.86 | 416453 | 9.71 | 189551 | 12.97 | 216545 | 15.53 | 94008 | 6.48 |
| ZZZZZZ | 291782 | 8.87 | 397921 | 9.72 | 185266 | 12.97 | 213688 | 15.53 | 89401 | 6.48 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1403-CC1370 | Injection Date: | 09/27/11 |
| Lab File ID: | M43596.D | Injection Time: | 10:59 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 120352 | 9.19 | 168216 | 10.07 | 82647 | 13.34 | 112277 | 15.90 | 37467 | 6.74 |
| Upper Limit [a] | 240704 | 9.69 | 336432 | 10.57 | 165294 | 13.84 | 224554 | 16.40 | 74934 | 7.24 |
| Lower Limit [b] | 60176 | 8.69 | 84108 | 9.57 | 41324 | 12.84 | 56139 | 15.40 | 18734 | 6.24 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1404-BS | 123970 | 9.19 | 182075 | 10.07 | 82381 | 13.34 | 116872 | 15.90 | 35659 | 6.74 |
| MSM1404-BSD | 125673 | 9.19 | 185223 | 10.07 | 88363 | 13.34 | 114672 | 15.90 | 36851 | 6.74 |
| MSM1404-MB | 123065 | 9.19 | 168397 | 10.07 | 82305 | 13.34 | 101016 | 15.90 | 35988 | 6.74 |
| ZZZZZZ | 116469 | 9.19 | 157239 | 10.07 | 83010 | 13.34 | 100944 | 15.90 | 34441 | 6.74 |
| ZZZZZZ | 115967 | 9.19 | 168088 | 10.07 | 81780 | 13.34 | 107415 | 15.90 | 35338 | 6.73 |
| ZZZZZZ | 136288 | 9.19 | 199074 | 10.07 | 93960 | 13.34 | 119146 | 15.90 | 42053 | 6.74 |
| ZZZZZZ | 137053 | 9.19 | 197660 | 10.07 | 89198 | 13.34 | 112053 | 15.90 | 36707 | 6.74 |
| ZZZZZZ | 122428 | 9.19 | 174755 | 10.07 | 81303 | 13.34 | 109062 | 15.90 | 33695 | 6.74 |
| ZZZZZZ | 114549 | 9.19 | 169004 | 10.07 | 81229 | 13.34 | 107922 | 15.90 | 33620 | 6.74 |
| ZZZZZZ | 123364 | 9.19 | 178373 | 10.07 | 80448 | 13.34 | 110558 | 15.90 | 32905 | 6.74 |
| MC3779-8 | 117251 | 9.19 | 174588 | 10.07 | 84587 | 13.34 | 106828 | 15.90 | 36773 | 6.74 |
| MC3779-8MS | 124517 | 9.19 | 187646 | 10.07 | 89543 | 13.34 | 113882 | 15.90 | 35796 | 6.74 |
| MC3779-8MSD | 126198 | 9.19 | 176700 | 10.07 | 84953 | 13.34 | 112530 | 15.90 | 35119 | 6.74 |
| ZZZZZZ | 127518 | 9.19 | 183502 | 10.07 | 85421 | 13.34 | 108002 | 15.90 | 34072 | 6.74 |
| ZZZZZZ | 115965 | 9.19 | 165311 | 10.07 | 78356 | 13.34 | 106686 | 15.90 | 34815 | 6.74 |
| ZZZZZZ | 121473 | 9.19 | 170149 | 10.07 | 81702 | 13.34 | 111932 | 15.90 | 35319 | 6.74 |
| ZZZZZZ | 121199 | 9.19 | 174071 | 10.07 | 79893 | 13.34 | 113181 | 15.90 | 33932 | 6.75 |
| ZZZZZZ | 120230 | 9.19 | 172059 | 10.07 | 81878 | 13.34 | 108102 | 15.90 | 35559 | 6.74 |
| MC3639-7 | 123136 | 9.19 | 166743 | 10.07 | 83939 | 13.34 | 108162 | 15.90 | 36665 | 6.74 |
| ZZZZZZ | 113382 | 9.19 | 167441 | 10.07 | 78404 | 13.34 | 102607 | 15.90 | 33492 | 6.74 |
| ZZZZZZ | 114878 | 9.19 | 164228 | 10.07 | 78120 | 13.34 | 100025 | 15.90 | 33188 | 6.74 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1404-CC1371 | Injection Date: | 09/27/11 |
| Lab File ID: | M43596A.D | Injection Time: | 10:59 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 120352 | 9.19 | 168216 | 10.07 | 82647 | 13.34 | 112277 | 15.90 | 37467 | 6.74 |
| Upper Limit [a] | 240704 | 9.69 | 336432 | 10.57 | 165294 | 13.84 | 224554 | 16.40 | 74934 | 7.24 |
| Lower Limit [b] | 60176 | 8.69 | 84108 | 9.57 | 41324 | 12.84 | 56139 | 15.40 | 18734 | 6.24 |
| Lab Sample ID | IS I AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1403-BS | 123970 | 9.19 | 182075 | 10.07 | 82381 | 13.34 | 116872 | 15.90 | 35659 | 6.74 |
| MSM1403-BSD | 125673 | 9.19 | 185223 | 10.07 | 88363 | 13.34 | 114672 | 15.90 | 36851 | 6.74 |
| MSM1403-MB | 123065 | 9.19 | 168397 | 10.07 | 82305 | 13.34 | 101016 | 15.90 | 35988 | 6.74 |
| ZZZZZZ | 114585 | 9.19 | 160862 | 10.07 | 78469 | 13.34 | 102118 | 15.90 | 36126 | 6.73 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV93-CC67 | Injection Date: | 09/27/11 |
| Lab File ID: | V2117.D | Injection Time: | 08:24 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 382176 | 6.54 | 577011 | 7.72 | 304263 | 11.08 | 309226 | 13.31 | 114564 | 3.51 |
| Upper Limit [a] | 764352 | 7.04 | 1154022 | 8.22 | 608526 | 11.58 | 618452 | 13.81 | 229128 | 4.01 |
| Lower Limit [b] | 191088 | 6.04 | 288506 | 7.22 | 152132 | 10.58 | 154613 | 12.81 | 57282 | 3.01 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSV93-BS | 386248 | 6.53 | 582182 | 7.72 | 306946 | 11.08 | 310085 | 13.31 | 121956 | 3.51 |
| MSV93-MB | 366766 | 6.53 | 570512 | 7.72 | 307573 | 11.08 | 316187 | 13.31 | 179003 | 3.50 |
| ZZZZZZ | 379165 | 6.53 | 583490 | 7.72 | 324173 | 11.07 | 321761 | 13.31 | 154223 | 3.50 |
| MC3639-1 | 408150 | 6.54 | 621283 | 7.72 | 389484 | 11.07 | 328323 | 13.31 | 172368 | 3.52 |
| ZZZZZZ | 390503 | 6.54 | 600499 | 7.72 | 326888 | 11.08 | 336997 | 13.31 | 161133 | 3.50 |
| ZZZZZZ | 400328 | 6.54 | 609421 | 7.72 | 323373 | 11.08 | 333963 | 13.31 | 160035 | 3.51 |
| ZZZZZZ | 411549 | 6.53 | 619133 | 7.72 | 317698 | 11.08 | 264849 | 13.31 | 172752 | 3.52 |
| ZZZZZZ | 407282 | 6.53 | 641252 | 7.72 | 339217 | 11.08 | 340005 | 13.32 | 76721 | 3.79 |
| ZZZZZZ | 408895 | 6.54 | 638281 | 7.73 | 339575 | 11.08 | 340895 | 13.31 | 163280 | 3.51 |
| MC3751-4 | 381330 | 6.54 | 586351 | 7.72 | 314722 | 11.08 | 317386 | 13.31 | 168953 | 3.50 |
| ZZZZZZ | 375919 | 6.54 | 575912 | 7.72 | 311706 | 11.08 | 309440 | 13.31 | 169666 | 3.51 |
| ZZZZZZ | 364332 | 6.54 | 563000 | 7.72 | 290084 | 11.08 | 300080 | 13.31 | 102976 | 3.49 |
| ZZZZZZ | 380161 | 6.54 | 589035 | 7.73 | 320498 | 11.08 | 322674 | 13.31 | 166030 | 3.51 |
| MC3751-4MS | 394375 | 6.53 | 597344 | 7.72 | 318579 | 11.08 | 324283 | 13.31 | 175067 | 3.50 |
| MC3751-4MSD | 409918 | 6.53 | 627814 | 7.72 | 335314 | 11.08 | 342075 | 13.31 | 188954 | 3.50 |
| ZZZZZZ | 385525 | 6.53 | 589564 | 7.72 | 314630 | 11.08 | 324006 | 13.31 | 170885 | 3.50 |
| ZZZZZZ | 383427 | 6.53 | 589990 | 7.72 | 316894 | 11.07 | 322911 | 13.31 | 163560 | 3.49 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Surrogate Recovery Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3639-7 | M43618.D | 87.0 | 98.0 | 92.0 |
| MC3779-8MS | M43611.D | 87.0 | 92.0 | 95.0 |
| MC3779-8MSD | M43612.D | 85.0 | 98.0 | 88.0 |
| MSM1403-BS | M43597.D | 85.0 | 93.0 | 86.0 |
| MSM1403-BSD | M43598.D | 86.0 | 94.0 | 96.0 |
| MSM1403-MB | M43599.D | 88.0 | 96.0 | 95.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3639-1 | V2123.D | 94.0 | 116.0 | 122.0 |
| MC3639-2 | K54932.D | 114.0 | 104.0 | 117.0 |
| MC3639-3 | K54930.D | 108.0 | 104.0 | 111.0 |
| MC3639-4 | K54931.D | 112.0 | 108.0 | 112.0 |
| MC3639-5 | K54933.D | 109.0 | 104.0 | 110.0 |
| MC3639-6 | K54934.D | 107.0 | 101.0 | 114.0 |
| MC3639-4MS | K54942.D | 103.0 | 109.0 | 105.0 |
| MC3639-4MSD | K54943.D | 101.0 | 106.0 | 103.0 |
| MC3751-4MS | V2134.D | 99.0 | 98.0 | 98.0 |
| MC3751-4MSD | V2135.D | 99.0 | 97.0 | 97.0 |
| MSK1835-BS | K54925.D | 102.0 | 105.0 | 101.0 |
| MSK1835-BSD | K54926.D | 100.0 | 104.0 | 99.0 |
| MSK1835-MB | K54928.D | 102.0 | 99.0 | 106.0 |
| MSV93-BS | V2120.D | 100.0 | 99.0 | 99.0 |
| MSV93-MB | V2121.D | 101.0 | 97.0 | 95.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

New England ACCUTEST LABORATORIES

## GC Volatiles



# QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1319-MB | BH24013.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |



The QC reported here applies to the following samples: Method: SW846 8015

MC3639-1, MC3639-2, MC3639-3, MC3639-4, MC3639-5, MC3639-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 3.6 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 79% | 36-148% |

# Blank Spike Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1319-BSP | BH24014.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3639-1, MC3639-2, MC3639-3, MC3639-4, MC3639-5, MC3639-6

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 16.7 | 84 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 92% | 36-148% |

6.2.1

6

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3644-1MS | BH24024.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |
| MC3644-1MSD | BH24025.D | 1 | 09/21/11 | WS | n/a | n/a | GBH13I9 |
| MC3644-1 | BH24023.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3639-1, MC3639-2, MC3639-3, MC3639-4, MC3639-5, MC3639-6

| CAS No. | Compound | MC3644-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 336 | | 50.3 | 459 | 245* [a] | 438 | 203* [a] | 5 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3644-1 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 91% | 88% | 90% | 36-148% |

(a) Outside control limits due to high level in sample relative to spike amount.

6.3.1

6

# Volatile Surrogate Recovery Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, 1L

Method: SW846 8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3639-1 | BH24029.D | 109.0 |
| MC3639-2 | BH24030.D | 114.0 |
| MC3639-3 | BH24031.D | 109.0 |
| MC3639-4 | BH24032.D | 111.0 |
| MC3639-5 | BH24033.D | 116.0 |
| MC3639-6 | BH24034.D | 83.0 |
| GBH1319-BSP | BH24014.D | 92.0 |
| GBH1319-MB | BH24013.D | 79.0 |
| MC3644-1MS | BH24024.D | 91.0 |
| MC3644-1MSD | BH24025.D | 88.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1318-CC1043 | Injection Date: | 09/21/11 |
| Lab File ID: | BH24012.D | Injection Time: | 05:03 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1319-MB | BH24013.D | 09/21/11 | 09:14 | 32.40 |
| GBH1319-BSP | BH24014.D | 09/21/11 | 09:54 | 32.39 |
| ZZZZZZ | BH24015.D | 09/21/11 | 10:34 | 32.39 |
| ZZZZZZ | BH24016.D | 09/21/11 | 11:14 | 32.40 |
| ZZZZZZ | BH24017.D | 09/21/11 | 11:55 | 32.39 |
| ZZZZZZ | BH24018.D | 09/21/11 | 12:35 | 32.39 |
| ZZZZZZ | BH24019.D | 09/21/11 | 13:15 | 32.39 |
| ZZZZZZ | BH24021.D | 09/21/11 | 14:35 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1319-CC1043 | Injection Date: | 09/21/11 |
| Lab File ID: | BH24012A.D | Injection Time: | 05:03 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1319-MB | BH24013.D | 09/21/11 | 09:14 | 32.40 |
| GBH1319-BSP | BH24014.D | 09/21/11 | 09:54 | 32.39 |
| ZZZZZZ | BH24015.D | 09/21/11 | 10:34 | 32.39 |
| ZZZZZZ | BH24016.D | 09/21/11 | 11:14 | 32.40 |
| ZZZZZZ | BH24017.D | 09/21/11 | 11:55 | 32.39 |
| ZZZZZZ | BH24018.D | 09/21/11 | 12:35 | 32.39 |
| ZZZZZZ | BH24019.D | 09/21/11 | 13:15 | 32.39 |
| ZZZZZZ | BH24021.D | 09/21/11 | 14:35 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

6.5.2

6

# GC Surrogate Retention Time Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1319-CC1043 | Injection Date: | 09/21/11 |
| Lab File ID: | BH24022.D | Injection Time: | 15:15 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3644-1 | BH24023.D | 09/21/11 | 15:55 | 32.39 |
| MC3644-1MS | BH24024.D | 09/21/11 | 16:35 | 32.39 |
| MC3644-1MSD | BH24025.D | 09/21/11 | 17:15 | 32.39 |
| ZZZZZZ | BH24026.D | 09/21/11 | 17:55 | 32.39 |
| ZZZZZZ | BH24027.D | 09/21/11 | 18:36 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1319-CC1043 | Injection Date: | 09/21/11 |
| Lab File ID: | BH24028.D | Injection Time: | 19:16 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3639-1 | BH24029.D | 09/21/11 | 19:56 | 32.39 |
| MC3639-2 | BH24030.D | 09/21/11 | 20:36 | 32.39 |
| MC3639-3 | BH24031.D | 09/21/11 | 21:16 | 32.39 |
| MC3639-4 | BH24032.D | 09/21/11 | 21:56 | 32.39 |
| MC3639-5 | BH24033.D | 09/21/11 | 22:36 | 32.39 |
| MC3639-6 | BH24034.D | 09/21/11 | 23:16 | 32.39 |
| ZZZZZZ | BH24035.D | 09/21/11 | 23:56 | 32.39 |
| ZZZZZZ | BH24036.D | 09/22/11 | 00:35 | 32.39 |
| ZZZZZZ | BH24037.D | 09/22/11 | 01:15 | 32.39 |
| ZZZZZZ | BH24038.D | 09/22/11 | 01:54 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

New England ACCUTEST LABORATORIES

## GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26286-MB | BG31081.D | 1 | 09/24/11 | KD | 09/17/11 | OP26286 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3639-1, MC3639-2, MC3639-3, MC3639-4, MC3639-5, MC3639-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 16 | 12 | mg/kg | |
| | TPH (>C28-C40) | ND | 16 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 88% | 24-147% |

7.1.1

7

# Blank Spike Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26286-BS | BG31082.D | 1 | 09/24/11 | KD | 09/17/11 | OP26286 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3639-1, MC3639-2, MC3639-3, MC3639-4, MC3639-5, MC3639-6

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 162 | 102 | 63 | 63-139 |
| | TPH (>C28-C40) | 162 | 94.6 | 59 | 46-103 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 94% | 24-147% |

7.2.1

7

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26286-MS | BG31099.D | 1 | 09/25/11 | KD | 09/17/11 | OP26286 | GBG1108 |
| OP26286-MSD | BG31100.D | 1 | 09/25/11 | KD | 09/17/11 | OP26286 | GBG1108 |
| MC3644-1 | BG31101.D | 1 | 09/25/11 | KD | 09/17/11 | OP26286 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3639-1, MC3639-2, MC3639-3, MC3639-4, MC3639-5, MC3639-6



| CAS No. | Compound | MC3644-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 460 | | 165 | 943 | 293* [a] | 593 | 78 | 46 | 8-154/127 |
| | TPH (>C28-C40) | 27.2 | | 165 | 142 | 70 | 112 | 50 | 24 | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3644-1 | Limits |
|---|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 76% | 72% | 85% | 24-147% |

(a) Outside control limits due to high level in sample relative to spike amount.

# Semivolatile Surrogate Recovery Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3639-1 | BG31098.D | 79.0 |
| MC3639-2 | BG31111.D | 63.0 |
| MC3639-3 | BG31094.D | 83.0 |
| MC3639-4 | BG31093.D | 75.0 |
| MC3639-5 | BG31213.D | 83.0 |
| MC3639-6 | BG31110.D | 75.0 |
| OP26286-BS | BG31082.D | 94.0 |
| OP26286-MB | BG31081.D | 88.0 |
| OP26286-MS | BG31099.D | 76.0 |
| OP26286-MSD | BG31100.D | 72.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 1-Chlorooctadecane | 24-147% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/24/11 |
| Lab File ID: | BG31073.D | Injection Time: | 13:10 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26295-MB | BG31074.D | 09/24/11 | 14:04 | 14.97 |
| OP26295-BS | BG31075.D | 09/24/11 | 14:5I | I4.96 |
| OP26295-MS | BG31076.D | 09/24/11 | 15:47 | 14.97 |
| OP26295-MSD | BG31077.D | 09/24/11 | 16:33 | 14.97 |
| MC3696-1 | BG31078.D | 09/24/11 | 17:19 | 14.97 |
| ZZZZZZ | BG31079.D | 09/24/11 | 18:05 | 14.97 |
| ZZZZZZ | BG31080.D | 09/24/11 | 18:52 | 14.97 |
| OP26286-MB | BG31081.D | 09/24/11 | 19:38 | 14.98 |
| OP26286-BS | BG31082.D | 09/24/11 | 20:24 | 14.98 |
| ZZZZZZ | BG31083.D | 09/24/11 | 21:11 | 14.98 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/24/11 |
| Lab File ID: | BG31084.D | Injection Time: | 21:57 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31085.D | 09/24/11 | 22:43 | 14.98 |
| ZZZZZZ | BG31086.D | 09/24/11 | 23:30 | 14.98 |
| OP26341-MB | BG31087.D | 09/25/11 | 00:16 | 14.97 |
| OP26341-BS | BG31088.D | 09/25/11 | 01:03 | 14.97 |
| ZZZZZZ | BG31089.D | 09/25/11 | 01:49 | 14.97 |
| ZZZZZZ | BG31090.D | 09/25/11 | 02:35 | 14.96 |
| ZZZZZZ | BG31091.D | 09/25/11 | 03:22 | 14.96 |
| ZZZZZZ | BG31092.D | 09/25/11 | 04:08 | 14.97 |
| MC3639-4 | BG31093.D | 09/25/11 | 04:54 | 14.98 |
| MC3639-3 | BG31094.D | 09/25/11 | 05:41 | 14.98 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.2

7

# GC Surrogate Retention Time Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/25/11 |
| Lab File ID: | BG31095.D | Injection Time: | 06:27 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31096.D | 09/25/11 | 07:14 | 14.97 |
| ZZZZZZ | BG31097.D | 09/25/11 | 08:00 | 14.98 |
| MC3639-1 | BG31098.D | 09/25/11 | 08:46 | 14.98 |
| OP26286-MS | BG31099.D | 09/25/11 | 09:32 | 14.99 |
| OP26286-MSD | BG31100.D | 09/25/11 | 10:19 | 14.98 |
| MC3644-1 | BG31101.D | 09/25/11 | 11:05 | 14.98 |
| ZZZZZZ | BG31102.D | 09/25/11 | 11:51 | 14.98 |
| ZZZZZZ | BG31103.D | 09/25/11 | 12:37 | 14.98 |
| OP26341-MS | BG31104.D | 09/25/11 | 13:24 | 14.98 |
| OP26341-MSD | BG31105.D | 09/25/11 | 14:10 | 14.98 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.3

7

# GC Surrogate Retention Time Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/25/11 |
| Lab File ID: | BG31106.D | Injection Time: | 14:56 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3693-1 | BG31107.D | 09/25/11 | 15:42 | 14.98 |
| ZZZZZZ | BG31108.D | 09/25/11 | 16:28 | 14.98 |
| ZZZZZZ | BG31109.D | 09/25/11 | 17:14 | 14.98 |
| MC3639-6 | BG31110.D | 09/25/11 | 18:01 | 14.99 |
| MC3639-2 | BG31111.D | 09/25/11 | 18:47 | 14.98 |
| ZZZZZZ | BG31113.D | 09/25/11 | 20:19 | 14.96 |
| ZZZZZZ | BG31114.D | 09/25/11 | 21:06 | 14.96 |
| ZZZZZZ | BG31115.D | 09/25/11 | 21:52 | 14.97 |
| GBG1108-ECC110 | BG31116.D | 09/25/11 | 22:38 | 14.96 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.4

7

# GC Surrogate Retention Time Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1113-CC1103 | Injection Date: | 09/29/11 |
| Lab File ID: | BG31212.D | Injection Time: | 10:12 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.87 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3639-5 | BG31213.D | 09/29/11 | 11:02 | 14.88 |
| ZZZZZZ | BG31214.D | 09/29/11 | 11:48 | 14.87 |
| GBG1113-ECC110 | BG31215.D | 09/29/11 | 12:34 | 14.87 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.5

7

New England ACCUTEST LABORATORIES

## General Chemistry

# QC Data Summaries

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Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC3639
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC3639-1 Analyzed: 20-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE17 (17.5-20)91511

| | | |
|---|---|---|
| Wet Weight (Total) | 35.165 | g |
| Tare Weight | 27.955 | g |
| Dry Weight (Total) | 34.885 | g |
| Solids, Percent | 96.1 | % |

Sample: MC3639-2 Analyzed: 20-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE14 (12.5-15)91511

| | | |
|---|---|---|
| Wet Weight (Total) | 24.349 | g |
| Tare Weight | 18.328 | g |
| Dry Weight (Total) | 23.548 | g |
| Solids, Percent | 86.7 | % |

Sample: MC3639-3 Analyzed: 20-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP39 (20-22.5)91511 DUP

| | | |
|---|---|---|
| Wet Weight (Total) | 24.395 | g |
| Tare Weight | 18.369 | g |
| Dry Weight (Total) | 24.172 | g |
| Solids, Percent | 96.3 | % |

Sample: MC3639-4 Analyzed: 20-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP39 (20-22.5)91511

| | | |
|---|---|---|
| Wet Weight (Total) | 33.833 | g |
| Tare Weight | 25.81 | g |
| Dry Weight (Total) | 33.552 | g |
| Solids, Percent | 96.5 | % |

Sample: MC3639-5 Analyzed: 20-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP39 (10-12.5)91511

| | | |
|---|---|---|
| Wet Weight (Total) | 27.491 | g |
| Tare Weight | 21.445 | g |
| Dry Weight (Total) | 26.794 | g |
| Solids, Percent | 88.5 | % |

Sample: MC3639-6 Analyzed: 20-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP39 (30-31)91511

| | | |
|---|---|---|
| Wet Weight (Total) | 28.032 | g |
| Tare Weight | 19.686 | g |
| Dry Weight (Total) | 27.638 | g |
| Solids, Percent | 95.3 | % |

# SVE Install 2011 Data Review

**Laboratory SDG: MC3644**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 12/20/2011**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| SVE-18 (17.5-20) 091511 | EB-091511 |
| SVE-36 (17.5-20) 091511 | SVE-19 (15-17.5) 091511 |
| TB-091511 #2 | |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

*Yes,* the laboratory case narrative indicated VOC LCS/LCSD recoveries and VOC LCS/LCSD RPDs were outside evaluation criteria. VOC, TPH-GRO, and TPH-DRO MS/MSD recoveries and MS/MSD RPDs were outside of evaluation criteria in sample SVE-18 (17.5-20) 091511. Although not mentioned in the laboratory case narrative, methylene chloride was detected in the trip blank. Professional judgment was used to qualify acetone in samples SVE-36 (17.5-20) 091511 and SVE-19 (15-17.5) 091511. These issues are addressed further in the appropriate sections below.

The cooler receipt form did not indicate any problems.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

Yes

| Blank ID | Parameter | Analyte | Concentration |
|---|---|---|---|
| TB-091511 #2 | VOCs | Methylene chloride | 1.0 ug/L |

Analytical data that were reported non-detect or at concentrations greater than five times (5X) the associated blank concentration (10X for common laboratory contaminants) did not require qualification. No qualification of data was required.

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSV93-BS | VOCs | Acrolein | **374** | NA | 70-130 |
| MSV93-BS | VOCs | Acrylonitrile | **644** | NA | 70-130 |
| MSK1836-BS/BSD | VOCs | Dichlorodifluoromethane | 70/**64** | 8 | 70-130/25 |
| MSM1403-BS/BSD | VOCs | Acetone | **139**/106 | **27** | 70-130/25 |
| MSM1403-BS/BSD | VOCs | Acrolein | 100/72 | **32** | 70-130/25 |
| MSM1403-BS/BSD | VOCs | Acrylonitrile | **394/438** | 11 | 70-130/25 |
| MSM1403-BS/BSD | VOCs | 2-Chloroethyl vinyl ether | **59/57** | 3 | 70-130/25 |
| MSM1403-BS/BSD | VOCs | Dibromochloromethane | **137**126 | 8 | 70-130/25 |
| MSM1403-BS/BSD | VOCs | Hexachlorobutadiene | **148/146** | 1 | 70-130/25 |
| MSM1403-BS/BSD | VOCs | 2-Hexanone | **136**/105 | **26** | 70-130/25 |
| MSM1403-BS/BSD | VOCs | Tetrachloroethene | **140/133** | 5 | 70-130/25 |
| MSM1403-BS/BSD | VOCs | Vinyl acetone | **55/60** | 9 | 70-130/25 |
| MSM1403-BS/BSD | VOCs | Vinyl chloride | **69/69** | 1 | 70-130/25 |

Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS/LCSD MSM1403-BS/BSD was associated with trip blank sample TB-091511 #2 and equipment blank sample EB-091511. Trip blank samples and equipment blank samples are quality control samples and are not qualified. LCS samples are not qualified based on RPD alone and LCS recoveries were within acceptance criteria, therefore, did not require qualification. No qualification of data was required.

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, sample SVE-18 (17.5-20) 091511 was spiked and analyzed for VOCs, TPH-GRO, TPH-DRO, and TPH-ORO.

*Were MS/MSD recoveries within evaluation criteria?*

No

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/ RPD Criteria |
|---|---|---|---|---|---|
| SVE-18 (17.5-20) 091511 | VOCs | Chloromethane | **68**/74 | 8 | 70-130/30 |
| SVE-18 (17.5-20) 091511 | VOCs | Dichlorodifluoromethane | **62/68** | 9 | 70-130/30 |
| SVE-18 (17.5-20) 091511 | VOCs | Vinyl acetate | **68**/70 | 2 | 70-130/30 |
| SVE-18 (17.5-20) 091511 | TPH-GRO | TPH-GRO | **245/203** | 5 | 40-154/20 |
| SVE-18 (17.5-20) 091511 | TPH-DRO/ORO | TPH-DRO | **293**/78 | 46 | 8-154/127 |

USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone and LCS recoveries were within evaluation criteria with the exception of compounds listed and qualified as appropriate in Section 5.0 of this data review. No further qualification of the data was required.

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

No

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

Yes, professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations less than two times (2X) the reporting limit (RL). Additionally, USEPA Method 5035A states that acidification of certain soils with sodium bisulfate may produce a false positive acetone artifact of 100-200 ppb, or more. Acetone reported at concentrations less than 200 ppb (ug/kg) were qualified.

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| SVE-36 (17.5-20) 091511 | Acetone | - | **U** | Professional Judgment |

Additionally, professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations greater than two times (2X) the reporting limit (RL), since acetone is not representative of site conditions.

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| SVE-19 (15-17.5) 091511 | Acetone | 32.6 ug/kg | **U** | Professional Judgment |

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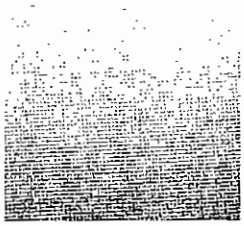
11/23/11





## Technical Report for

Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC3644

Sampling Date: 09/15/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **99**

Reviewed on 12/20/2011

Reza Tand
Lab Director

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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# Sample Summary

Shell Oil

Job No: MC3644

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|
| MC3644-1 | 09/15/11 | 11:35 AW | 09/16/11 | SO | Soil | SVE-18 (17.5-20)091511 |
| MC3644-1D | 09/15/11 | 11:35 AW | 09/16/11 | SO | Soil Dup/MSD | SVE-18 (17.5-20)091511 |
| MC3644-1S | 09/15/11 | 11:35 AW | 09/16/11 | SO | Soil Matrix Spike | SVE-18 (17.5-20)091511 |
| MC3644-2 | 09/15/11 | 15:45 AW | 09/16/11 | AQ | Equipment Blank | EB091511 |
| MC3644-3 | 09/15/11 | 13:30 AW | 09/16/11 | SO | Soil | SVE-36 (17.5-20)091511 |
| MC3644-4 | 09/15/11 | 13:05 AW | 09/16/11 | SO | Soil | SVE-19 (15-17.5)091511 |
| MC3644-5 | 09/15/11 | 17:00 AW | 09/16/11 | AQ | Trip Blank Water | TB091511 #2 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC3644 |
| **Site:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Ra | **Report Date** | 9/30/2011 4:28:21 PM |

4 Sample(s) and 1 Trip Blank(s) were collected on 09/15/2011 and were received at Accutest on 09/16/2011 properly preserved, at 2.1 Deg. C and intact. These Samples received an Accutest job number of MC3644. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Seetion of this report.

Except as noted below, all method specified calibrations and quality control performance eriteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSM1403

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific eriteria.
- Sample(s) MC3779-8MS, MC3779-8MSD were used as the QC samples indicated.
- MC3779-8MS/MSD for 2-Chloroethyl vinyl ether, Chloromethane, Hexaehlorobutadiene, Vinyl Acetate, Vinyl ehloride are outside control limits due to possible matrix interference. Refer to Blank Spike.
- MC3779-8MSD for Tetrachloroethene, Methyl Tert Butyl Ether are outside eontrol limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MC3779-8MSD for 2-Chloroethyl vinyl ether is outside control limits. High RPD due to possible matrix interferenee and/or sample non-homogeneity.
- RPD(s) for MSM1403-BSD for Aeetone, Acrolein, 2-Hexanone: Outside eontrol limits. Blank Spike meets program teehnical requirements.
- MSM1403-BS/BSD for Aerylonitrile: Outside control limits. Associated samples are non-detect for this eompound.
- MC3779-8MS/MSD for Acrolein, Acrylonitrile: Outside eontrol limits. Assoeiated samples are non-detect for this compound.
- MSM1403-BS/BSD for 2-Chloroethyl vinyl ether, Hexachlorobutadiene, Tetrachloroethene, Vinyl Acetate, Vinyl chloride: Outside eontrol limits. Blank Spike meets program teehnical requirements.
- MSM1403-BS for Acetone, Dibromochloromethane, 2-Hexanone: Outside control limits. Blank Spike meets program technical requirements.

**Matrix** SO **Batch ID:** MSK1836

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3644-1MS, MC3644-1MSD were used as the QC samples indicated.
- MC3644-1MS for Chloromethane, Vinyl Acetate are outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSK1836-BSD for Dichlorodifluoromethane are outside control limits. Blank Spike meets program technical requirements.
- MC3644-1MS/MSD for Dichlorodifluoromethane are outside control limits due to possible matrix interferencc. Refer to Blank Spike.

**Matrix** SO **Batch ID:** MSV93

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3751-4MS, MC3751-4MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MC3751-4MS/MSD for Acrolein, Acrylonitrile are outside control limits. Associated samples are non-detect for this compound.
- MC3751-4MSD for 1,4-Dioxane, 1,2-Dibromo-3-chloropropane are outside control limits due to possible matrix interference. Refer to Blank Spike.

## Volatiles by GCMS By Method SW846 8260B

| Matrix SO | Batch ID: MSV93 |
|---|---|

- MSV93-BS for Acrolein, Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.
- MC3751-4MS/MSD for 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK) are outside control limits due to possible matrix interference. Refer to Blank Spike.

## Volatiles by GC By Method SW846 8015

| Matrix AQ | Batch ID: GBH1321 |
|---|---|

- All samples were analyzed within the reeommended method holding time.
- Sample(s) MC3656-2MS, MC3656-2MSD were used as the QC samples indicated.
- All method blanks for this bateh meet method specific criteria.

| Matrix SO | Batch ID: GBH1319 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3644-1MS, MC3644-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method speeific criteria.
- MC3644-1MS/MSD for TPH-GRO (VOA) are outside control limits due to high level in sample relative to spike amount.

## Extractables by GC By Method SW846-8015

| Matrix AQ | Batch ID: OP26295 |
|---|---|

- All samples were extracted within the reeommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All mcthod blanks for this bateh meet method specific criteria.
- Sample(s) MC3696-1MS, MC3696-1MSD were used as the QC samplcs indicated.

| Matrix SO | Batch ID: OP26286 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3644-1MS, MC3644-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MC3644-1MS for TPH (C10-C28) are outside control limits due to high level in sample relative to spike amount.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN36185 |
|---|---|

- Sample(s) MC3644-1DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further reeommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC3644).

New England ACCUTEST LABORATORIES

## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-18 (17.5-20)091511 | | |
| Lab Sample ID: | MC3644-1 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 95.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K54965.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.61 g | 10.0 ml | 50.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 1200 | 270 | ug/kg | |
| 107-02-8 | Acrolein | ND | 5800 | 3900 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 1200 | 460 | ug/kg | |
| 71-43-2 | Benzene | ND | 120 | 29 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 1200 | 44 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 1200 | 240 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 460 | 49 | ug/kg | |
| 75-25-2 | Bromoform | ND | 460 | 110 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 460 | 160 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 1200 | 280 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 516 | 1200 | 290 | ug/kg | J |
| 135-98-8 | sec-Butylhenzene | 196 | 1200 | 38 | ug/kg | J |
| 98-06-6 | tert-Butylhenzene | ND | 1200 | 150 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 1200 | 220 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 460 | 52 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 460 | 22 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 1200 | 60 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 1200 | 1200 | ug/kg | |
| 67-66-3 | Chloroform | ND | 460 | 34 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 1200 | 50 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 1200 | 32 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 1200 | 260 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1200 | 1200 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 460 | 150 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 460 | 44 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 460 | 35 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 460 | 33 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 460 | 32 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 460 | 79 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 460 | 35 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 460 | 34 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 460 | 74 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-18 (17.5-20)091511 | | |
| Lab Sample ID: | MC3644-1 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 95.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 460 | 63 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 460 | 58 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 460 | 53 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 1200 | 270 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 1200 | 43 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 1200 | 45 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 460 | 230 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 460 | 160 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 5800 | 5800 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 1200 | 720 | ug/kg | |
| 100-41-4 | Ethylbenzene | 1090 | 460 | 30 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 1200 | 1200 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 1200 | 240 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 318 | 1200 | 37 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 322 | 1200 | 38 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 460 | 140 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 1200 | 190 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 1200 | 71 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 460 | 84 | ug/kg | |
| 91-20-3 | Naphthalene | 3910 | 1200 | 1200 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 383 | 1200 | 37 | ug/kg | J |
| 100-42-5 | Styrene | ND | 1200 | 120 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1200 | 230 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 460 | 41 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 460 | 39 | ug/kg | |
| 108-88-3 | Toluene | 81.7 | 1200 | 41 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1200 | 260 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1200 | 1200 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 460 | 42 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 460 | 59 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 460 | 45 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 460 | 210 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1200 | 49 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1740 | 1200 | 36 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 370 | 1200 | 42 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 1200 | 270 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 460 | 150 | ug/kg | |
| | m,p-Xylene | 1910 | 460 | 58 | ug/kg | |
| 95-47-6 | o-Xylene | 197 | 460 | 43 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 2110 | 460 | 29 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.1

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-18 (17.5-20)091511 | | |
| Lab Sample ID: | MC3644-1 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 95.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 111% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 105% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 108% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-18 (17.5-20)091511 | | |
| Lab Sample ID: | MC3644-1 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8015 | Percent Solids: | 95.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24023.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.24 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 336 | 13 | 9.1 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 90% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-18 (17.5-20)091511 | | |
| Lab Sample ID: | MC3644-1 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 95.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31101.D | 1 | 09/25/11 | KD | 09/17/11 | OP26286 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.8 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 460 | 17 | 12 | mg/kg | |
| | TPH (>C28-C40) | 27.2 | 17 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 85% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | EB091511 | | |
| Lab Sample ID: | MC3644-2 | Date Sampled: | 09/15/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M43620.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.2

| | | | |
|---|---|---|---|
| Client Sample ID: | EB091511 | | |
| Lab Sample ID: | MC3644-2 | Date Sampled: | 09/15/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.2

| | | | |
|---|---|---|---|
| **Client Sample ID:** | EB091511 | | |
| **Lab Sample ID:** | MC3644-2 | **Date Sampled:** | 09/15/11 |
| **Matrix:** | AQ - Equipment Blank | **Date Received:** | 09/16/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | n/a |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 84% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 92% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | EB091511 | | |
| Lab Sample ID: | MC3644-2 | Date Sampled: | 09/15/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/16/11 |
| Method: | SW846 8015 | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24051.D | 1 | 09/22/11 | WS | n/a | n/a | GBH1321 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 0.10 | 0.070 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 84% | | 60-126% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | EB091511 | | |
| Lab Sample ID: | MC3644-2 | Date Sampled: | 09/15/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/16/11 |
| Method: | SW846-8015 SW846 3510C | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31080.D | 1 | 09/24/11 | KD | 09/19/11 | OP26295 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 1000 ml | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 0.20 | 0.14 | mg/l | |
| | TPH ( > C28-C40) | ND | 0.20 | 0.14 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 52% | | 33-150% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-36 (17.5-20)091511 | | |
| Lab Sample ID: | MC3644-3 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 94.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2124.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.59 g | 5.0 ml |
| Run #2 | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~3.0~~ U | 5.8 | 1.3 | ug/kg | J U |
| 107-02-8 | Acrolein | ND | 29 | 19 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.8 | 2.3 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.58 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.8 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.8 | 1.2 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.3 | 0.24 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.3 | 0.54 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.3 | 0.78 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.8 | 1.4 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.8 | 1.5 | ug/kg | |
| I35-98-8 | sec-Butylbenzene | ND | 5.8 | 0.19 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.8 | 0.75 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.8 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.3 | 0.26 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.3 | 0.11 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.8 | 0.30 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.8 | 5.8 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.3 | 0.17 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.8 | 0.25 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.8 | 0.16 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.8 | 1.3 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.8 | 5.8 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.3 | 0.75 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.3 | 0.22 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.3 | 0.17 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.3 | 0.17 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.3 | 0.16 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.3 | 0.39 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.3 | 0.18 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.3 | 0.17 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.3 | 0.37 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-36 (17.5-20)091511 | | |
| Lab Sample ID: | MC3644-3 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 94.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.3 | 0.31 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.3 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.3 | 0.26 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.8 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.8 | 0.21 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.8 | 0.22 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.3 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.3 | 0.79 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 29 | 29 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.8 | 3.6 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.3 | 0.15 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.8 | 5.8 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.8 | 1.2 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.8 | 0.18 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.8 | 0.19 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.3 | 0.71 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.8 | 0.97 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.8 | 0.35 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.3 | 0.42 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.8 | 5.8 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.8 | 0.19 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.8 | 0.58 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.8 | 1.2 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.3 | 0.20 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.3 | 0.19 | ug/kg | |
| 108-88-3 | Toluene | 3.2 | 5.8 | 0.21 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.8 | 1.3 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.8 | 5.8 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.3 | 0.21 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.3 | 0.29 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.3 | 0.23 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.3 | 1.1 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.8 | 0.24 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.8 | 0.18 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.8 | 0.21 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.8 | 1.4 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.3 | 0.74 | ug/kg | |
| | m,p-Xylene | ND | 2.3 | 0.29 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.3 | 0.21 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.3 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-36 (17.5-20)091511 | | |
| Lab Sample ID: | MC3644-3 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 94.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 92% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-36 (17.5-20)091511 | | |
| Lab Sample ID: | MC3644-3 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8015 | Percent Solids: | 94.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24026.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.22 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 21.7 | 13 | 9.3 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 109% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-36 (17.5-20)091511 | | |
| Lab Sample ID: | MC3644-3 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 94.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31083.D | 1 | 09/24/11 | KD | 09/17/11 | OP26286 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.1 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | 13 | mg/kg | |
| | TPH (> C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 71% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.4

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-19 (15-17.5)091511 | | |
| Lab Sample ID: | MC3644-4 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 84.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2125.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.17 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~32.6~~ U | ~~5.7~~ 32.6 | 1.3 | ug/kg | U |
| 107-02-8 | Acrolein | ND | 29 | 19 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.7 | 2.3 | ug/kg | |
| 71-43-2 | Benzene | 5.2 | 0.57 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.7 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.7 | 1.2 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.3 | 0.24 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.3 | 0.54 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.3 | 0.77 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.7 | 1.4 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.7 | 1.4 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.7 | 0.19 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.7 | 0.75 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.7 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.3 | 0.26 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.3 | 0.11 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.7 | 0.30 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.7 | 5.7 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.3 | 0.17 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.7 | 0.25 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.7 | 0.16 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.7 | 1.3 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.7 | 5.7 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.3 | 0.74 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.3 | 0.22 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.3 | 0.17 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.3 | 0.17 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.3 | 0.16 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.3 | 0.39 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.3 | 0.17 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.3 | 0.17 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.3 | 0.36 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-19 (15-17.5)091511 | | |
| Lab Sample ID: | MC3644-4 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 84.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.3 | 0.31 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.3 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.3 | 0.26 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.7 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.7 | 0.21 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.7 | 0.22 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.3 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.3 | 0.78 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 29 | 29 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.7 | 3.6 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.3 | 0.15 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.7 | 5.7 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.7 | 1.2 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.7 | 0.18 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.7 | 0.19 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.3 | 0.71 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.7 | 0.96 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.7 | 0.35 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.3 | 0.41 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.7 | 5.7 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.7 | 0.18 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.7 | 0.57 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.7 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.3 | 0.20 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.3 | 0.19 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.7 | 0.20 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.7 | 1.3 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.7 | 5.7 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.3 | 0.21 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.3 | 0.29 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.3 | 0.22 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.3 | 1.1 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.7 | 0.24 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.7 | 0.18 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.7 | 0.21 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.7 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.3 | 0.74 | ug/kg | |
| | m,p-Xylene | ND | 2.3 | 0.29 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.3 | 0.21 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.3 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-19 (15-17.5)091511 | | |
| Lab Sample ID: | MC3644-4 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | 84.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 91% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-19 (15-17.5)091511 | | |
| Lab Sample ID: | MC3644-4 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846 8015 | Percent Solids: | 84.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24027.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.10 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 12 | 9.1 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 104% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-19 (15-17.5)091511 | | |
| Lab Sample ID: | MC3644-4 | Date Sampled: | 09/15/11 |
| Matrix: | SO - Soil | Date Received: | 09/16/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 84.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31085.D | 1 | 09/24/11 | KD | 09/17/11 | OP26286 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.4 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 19 | 15 | mg/kg | |
| | TPH (> C28-C40) | ND | 19 | 15 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 68% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | TB091511 #2 | | |
| Lab Sample ID: | MC3644-5 | Date Sampled: | 09/15/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M43619.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB091511 #2 | | |
| Lab Sample ID: | MC3644-5 | Date Sampled: | 09/15/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | 1.0 | 2.0 | 0.99 | ug/l | J |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB091511 #2 | | |
| Lab Sample ID: | MC3644-5 | Date Sampled: | 09/15/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/16/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 92% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES



## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

# Shell Oil Products Chain Of Custody Record

URS

LAB (LOCATION)
- ☐ XENCO ( )
- ☐ CALSCIENCE ( )
- ☑ OTHER Accutest Labs; 495 Technology Ctr W
- ☐ Lab Vendor # ( )
- ☐ SPL ( )

Lab Vendor #

Please Check Appropriate Box:
- ☑ ENV. SERVICES
- ☐ MOTIVA RETAIL
- ☐ SHELL RETA
- ☐ MOTIVA SD&CM
- ☐ CONSULTANT
- ☐ LUBES
- ☐ SHELL PIPELINE
- ☐ OTHER

Print Bill To Contact Name: Jeff Adams

PO #

INCIDENT # (ENV SERVICES): 9 7 2 1 6 4 4 0

SAP #: 3 4 0 0 6 1

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 9/15/11

PAGE: 1 of 1

SAMPLING COMPANY: URS CORPORATION

LOG CODE:

SITE ADDRESS: Street and City: 170 EAST RAND AVENUE – HARTFORD

State: IL

GLOBAL ID NO:

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300; ST. LOUIS, MO 63110

LOG DELIVERABLE TO (Name, Company, Office Location):

PHONE NO:

E-MAIL:

CONSULTANT PROJECT NO: Roxana SVE Install 2011 / 21542893.00014

PROJECT CONTACT (Invoicing or PDF Report to): Elizabeth Kunkel

TELEPHONE: 314-743-4179

FAX: 314-429-0462

Bill To Contact E-MAIL: elizabeth_kunkel@urscorp.com

SAMPLE # NAME (PRINT):

LAB USE ONLY: MC3644

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

REQUESTED ANALYSIS

☐ LA - RWQCB REPORT FORMAT ☑ LIST AGENCY:

DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C°: Cooler #1 | Cooler #2 | Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
- * Please include "J" values on Reports.
- * Please provide sample receipt upon login.

- ☑ SHELL CONTRACT RATE APPLIES
- ☐ STATE REIMBURSEMENT RATE APPLIES
- ☐ EDD NOT NEEDED
- ☑ RECEIPT VERIFICATION REQUESTED
- ☐ PROVIDE LEDD DISK

FIELD NOTES:

TEMPERATURE ON RECEIPT C°

| LAB LOG ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE HCL | HNO3 | H2SO4 | CHOCK | NaHSO4 | NONE | OTHER | # of Cont | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | FID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | SVE-18 (17.5-20) 091511 | 9/15/11 | 1135 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -2 | ~~EB-09~~ EB 091511 | 9/15/11 | 1545 | Soil | | | | | | 2 | | 6 | X | X | | |
| -1,5 | MS MSD 091511 | 9/15/11 | 1140 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -3 | SVE-36 (17.5-20) 091511 | 9/15/11 | 1330 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -4 | SVE-19 (15-17.5) 091511 | 9/15/11 | 1305 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -5 | TB 091511 #2 | 9/15/11 | 1700 | Soil | 1 | | | | | | | 1 | X | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | 10F, 16D, 10H2 |
| | | | | | | | | | | | | | | | | 4N6 |

| Relinquished by (Signature) | Received by (Signature) | Date | Time |
|---|---|---|---|
| [signature] 9/15/11 1730 | FedEx | | |
| FedEx First Over | [signature] | 9/16/11 | 830 |
| | | | 2.1° |

05/2/08 Revision

MC3644: Chain of Custody
Page 1 of 2

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC3644 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 9/16/2011 Delivery Method: Client Service Action Required at Login: No

Project: 170 EAST RAND AVE HARTFORD IL No. Coolers: 1 Airbill #'s: NA

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2. Custody Seals Intact: | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification: | Infared gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservatio | Y or N | N/A |
|---|---|---|
| 1. Trip Blank present / cooler: | ☑ ☐ | ☐ |
| 2. Trip Blank listed on COC: | ☑ ☐ | ☐ |
| 3. Samples preserved properly: | ☑ ☐ | |
| 4. VOCs headspace free: | ☑ ☐ | ☐ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles: | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree: | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1. Sample recvd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3. Condition of sample: | Intact |

| Sample Integrity - Instructions | Y or N | N/A |
|---|---|---|
| 1. Analysis requested is clear: | ☑ ☐ | |
| 2. Bottles received for unspecified tests | ☐ ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ ☐ | |
| 4. Compositing instructions clear: | ☐ ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ ☐ | ☑ |

Comments





**MC3644: Chain of Custody**
**Page 2 of 2**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3644

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3644-1 | Collected: 15-SEP-11 11:35 By: AW | | Received: 16-SEP-11 By: JB | | | |
| SVE-18 (17.5-20)091511 | | | | | | |
| MC3644-1 | SM21 2540 B MOD. | 20-SEP-11 | HS | | | %SOL |
| MC3644-1 | SW846 8015 | 21-SEP-11 15:55 | WS | | | V8015GRO |
| MC3644-1 | SW846 8260B | 22-SEP-11 16:25 | GK | | | V8260SL |
| MC3644-1 | SW846-8015 | 25-SEP-11 11:05 | KD | 17-SEP-11 | FC | B8015DROORO |
| MC3644-2 | Collected: 15-SEP-11 15:45 By: AW | | Received: 16-SEP-11 By: JB | | | |
| EB091511 | | | | | | |
| MC3644-2 | SW846 8015 | 22-SEP-11 17:30 | WS | | | V8015GRO |
| MC3644-2 | SW846-8015 | 24-SEP-11 18:52 | KD | 19-SEP-11 | FC | B8015DROORO |
| MC3644-2 | SW846 8260B | 27-SEP-11 23:07 | TD | | | V8260SL |
| MC3644-3 | Collected: 15-SEP-11 13:30 By: AW | | Received: 16-SEP-11 By: JB | | | |
| SVE-36 (17.5-20)091511 | | | | | | |
| MC3644-3 | SM21 2540 B MOD. | 20-SEP-11 | HS | | | %SOL |
| MC3644-3 | SW846 8015 | 21-SEP-11 17:55 | WS | | | V8015GRO |
| MC3644-3 | SW846-8015 | 24-SEP-11 21:11 | KD | 17-SEP-11 | FC | B8015DROORO |
| MC3644-3 | SW846 8260B | 27-SEP-11 11:56 | AMY | | | V8260SL |
| MC3644-4 | Collected: 15-SEP-11 13:05 By: AW | | Received: 16-SEP-11 By: JB | | | |
| SVE-19 (15-17.5)091511 | | | | | | |
| MC3644-4 | SM21 2540 B MOD. | 20-SEP-11 | HS | | | %SOL |
| MC3644-4 | SW846 8015 | 21-SEP-11 18:36 | WS | | | V8015GRO |
| MC3644-4 | SW846-8015 | 24-SEP-11 22:43 | KD | 17-SEP-11 | FC | B8015DROORO |
| MC3644-4 | SW846 8260B | 27-SEP-11 12:27 | AMY | | | V8260SL |
| MC3644-5 | Collected: 15-SEP-11 17:00 By: AW | | Received: 16-SEP-11 By: JB | | | |
| TB091511 #2 | | | | | | |
| MC3644-5 | SW846 8260B | 27-SEP-11 22:38 | TD | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/16/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3644-1.1 | Walk In Ref #9 | Bijan Jafari | 09/17/11 06:31 | Retrieve from Storage |
| MC3644-1.1 | Bijan Jafari | Walk In Ref #9 | 09/20/11 10:07 | Return to Storage |
| MC3644-1.1 | Walk In Ref #9 | Hamid Siamak | 09/20/11 10:26 | Retrieve from Storage |
| MC3644-1.1 | Hamid Siamak | Walk In Ref #9 | 09/20/11 12:51 | Return to Storage |
| MC3644-1.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3644-1.10 | VOC Ref #10 | William Shao | 09/21/11 09:00 | Retrieve from Storage |
| MC3644-1.10 | William Shao | GCBH | 09/21/11 09:00 | Load on Instrument |
| MC3644-1.10 | GCBH | William Shao | 09/21/11 09:00 | Unload from Instrument |
| MC3644-1.10 | William Shao | VOC Ref #10 | 09/21/11 09:00 | Return to Storage |
| MC3644-1.10 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3644-1.12 | VOC Ref #10 | Gary Krasinski | 09/21/11 14:42 | Retrieve from Storage |
| MC3644-1.12 | Gary Krasinski | VOC Ref #10 | 09/23/11 09:21 | Return to Storage |
| MC3644-1.12 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3644-2.2 | Walk In Ref #22 | Mahmoud Afzali | 09/19/11 13:48 | Retrieve from Storage |
| MC3644-2.2 | Mahmoud Afzali | | 09/20/11 09:38 | Depleted |
| MC3644-2.3 | VOC Ref #4 | William Shao | 09/22/11 10:10 | Retrieve from Storage |
| MC3644-2.3 | William Shao | GCBH | 09/22/11 10:10 | Load on Instrument |
| MC3644-2.3 | GCBH | William Shao | 09/22/11 10:10 | Unload from Instrument |
| MC3644-2.3 | William Shao | VOC Ref #4 | 09/22/11 10:10 | Return to Storage |
| MC3644-2.3 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3644-2.4 | VOC Ref #4 | Jugal Patel | 09/28/11 16:20 | Retrieve from Storage |
| MC3644-2.4 | Jugal Patel | GCMSM | 09/28/11 16:20 | Load on Instrument |
| MC3644-2.4 | GCMSM | Jugal Patel | 09/28/11 16:21 | Unload from Instrument |
| MC3644-2.4 | Jugal Patel | VOC Ref #4 | 09/28/11 16:21 | Return to Storage |
| MC3644-2.4 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3644-3.1 | Walk In Ref #9 | Bijan Jafari | 09/17/11 06:31 | Retrieve from Storage |
| MC3644-3.1 | Bijan Jafari | Walk In Ref #9 | 09/20/11 10:07 | Return to Storage |
| MC3644-3.1 | Walk In Ref #9 | Hamid Siamak | 09/20/11 10:26 | Retrieve from Storage |
| MC3644-3.1 | Hamid Siamak | Walk In Ref #9 | 09/20/11 12:51 | Return to Storage |
| MC3644-3.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3644-3.4 | VOC Ref #10 | Amy Min Yang | 09/27/11 10:04 | Retrieve from Storage |
| MC3644-3.4 | Amy Min Yang | GCMSV | 09/27/11 10:04 | Load on Instrument |
| MC3644-3.4 | GCMSV | Amy Min Yang | 10/04/11 17:33 | Unload from Instrument |
| MC3644-3.4 | Amy Min Yang | VOC Ref #10 | 10/04/11 17:33 | Return to Storage |
| MC3644-3.4 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3644-3.6 | VOC Ref #10 | William Shao | 09/21/11 09:00 | Retrieve from Storage |

# Accutest Internal Chain of Custody



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/16/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3644-3.6 | William Shao | GCBH | 09/21/11 09:00 | Load on Instrument |
| MC3644-3.6 | GCBH | William Shao | 09/21/11 09:00 | Unload from Instrument |
| MC3644-3.6 | William Shao | VOC Ref #10 | 09/21/11 09:00 | Return to Storage |
| MC3644-3.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3644-4.1 | Walk In Ref #9 | Bijan Jafari | 09/17/11 06:31 | Retrieve from Storage |
| MC3644-4.1 | Bijan Jafari | Walk In Ref #9 | 09/20/11 10:07 | Return to Storage |
| MC3644-4.1 | Walk In Ref #9 | Hamid Siamak | 09/20/11 10:26 | Retrieve from Storage |
| MC3644-4.1 | Hamid Siamak | Walk In Ref #9 | 09/20/11 12:51 | Return to Storage |
| MC3644-4.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3644-4.4 | VOC Ref #10 | Amy Min Yang | 09/27/11 10:04 | Retrieve from Storage |
| MC3644-4.4 | Amy Min Yang | GCMSV | 09/27/11 10:04 | Load on Instrument |
| MC3644-4.4 | GCMSV | Amy Min Yang | 10/04/11 17:33 | Unload from Instrument |
| MC3644-4.4 | Amy Min Yang | VOC Ref #10 | 10/04/11 17:33 | Return to Storage |
| MC3644-4.4 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3644-4.5 | VOC Ref #10 | Gary Krasinski | 09/21/11 14:42 | Retrieve from Storage |
| MC3644-4.5 | Gary Krasinski | VOC Ref #10 | 09/22/11 11:43 | Return to Storage |
| MC3644-4.5 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3644-4.6 | VOC Ref #10 | William Shao | 09/21/11 09:00 | Retrieve from Storage |
| MC3644-4.6 | William Shao | GCBH | 09/21/11 09:00 | Load on Instrument |
| MC3644-4.6 | GCBH | William Shao | 09/21/11 09:00 | Unload from Instrument |
| MC3644-4.6 | William Shao | VOC Ref #10 | 09/21/11 09:00 | Return to Storage |
| MC3644-4.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3644-5.1 | VOC Ref #4 | Jugal Patel | 09/28/11 16:20 | Retrieve from Storage |
| MC3644-5.1 | Jugal Patel | GCMSM | 09/28/11 16:20 | Load on Instrument |
| MC3644-5.1 | GCMSM | Jugal Patel | 09/28/11 16:21 | Unload from Instrument |
| MC3644-5.1 | Jugal Patel | VOC Ref #4 | 09/28/11 16:21 | Return to Storage |
| MC3644-5.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |

New England ACCUTEST LABORATORIES



## GC/MS Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1836-MB | K54953.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 58 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 850 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 250 | 100 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 6.3 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 9.5 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 52 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 10 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 24 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 34 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 59 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 63 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 8.3 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 33 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 48 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 11 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 4.7 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 13 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 250 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 7.4 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 11 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 7.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 56 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 250 | 250 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 33 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 100 | 9.6 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 7.5 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 7.2 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 7.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 17 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 7.6 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 7.3 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 16 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 13 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 11 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 58 | ug/kg | |

# Method Blank Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1836-MB | K54953.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 9.2 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 9.6 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 50 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 34 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 160 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 6.5 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 250 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 52 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 7.9 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.1 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 31 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 42 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 15 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 18 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 250 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 8.1 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 25 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 8.8 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 8.4 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 9.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 55 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 250 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 9.2 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 13 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 9.8 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 46 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 10 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 7.9 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 9.1 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 59 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 32 | ug/kg | |
| | m,p-Xylene | ND | 100 | 13 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 9.2 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 6.3 | ug/kg | |

# Method Blank Summary

Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1836-MB | K54953.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-1

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 108% | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 111% | 70-130% |

# Method Blank Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-MB | V2121.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-3, MC3644-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary

Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-MB | V2121.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-3, MC3644-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-MB | V2121.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-3, MC3644-4

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

# Method Blank Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1403-MB | M43599.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-2, MC3644-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-I | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| I08-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |

# Method Blank Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1403-MB | M43599.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-2, MC3644-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

# Method Blank Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1403-MB | M43599.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-2, MC3644-5

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 88% | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

# Blank Spike Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-BS | V2120.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-3, MC3644-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 51.7 | 103 | 70-130 |
| 107-02-8 | Acrolein | 250 | 935 | 374* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 322 | 644* a | 70-130 |
| 71-43-2 | Benzene | 50 | 55.4 | 111 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 50.4 | 101 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 51.6 | 103 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 52.2 | 104 | 70-130 |
| 75-25-2 | Bromoform | 50 | 47.5 | 95 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 49.5 | 99 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 57.9 | 116 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 61.2 | 122 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 55.1 | 110 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 52.8 | 106 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 48.6 | 97 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 49.1 | 98 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 57.5 | 115 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 56.9 | 114 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 19.1 | 38 | 10-160 |
| 67-66-3 | Chloroform | 50 | 53.5 | 107 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 48.2 | 96 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 51.5 | 103 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 53.0 | 106 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 48.9 | 98 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 51.6 | 103 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 53.0 | 106 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 56.4 | 113 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 52.7 | 105 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 51.9 | 104 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 51.2 | 102 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 57.1 | 114 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 53.2 | 106 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 55.1 | 110 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 52.2 | 104 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 52.6 | 105 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 54.0 | 108 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 52.4 | 105 | 70-130 |

# Blank Spike Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-BS | V2120.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-3, MC3644-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 55.4 | 111 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 52.1 | 104 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 54.3 | 109 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 57.4 | 115 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 254 | 102 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 55.6 | 111 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 57.4 | 115 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 54.6 | 109 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 60.5 | 121 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 62.6 | 125 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 57.6 | 115 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 52.5 | 105 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 61.1 | 122 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 53.6 | 107 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 58.8 | 118 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 57.3 | 115 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 54.5 | 109 | 70-130 |
| 100-42-5 | Styrene | 50 | 56.6 | 113 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 53.8 | 108 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 55.9 | 112 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 52.5 | 105 | 70-130 |
| 108-88-3 | Toluene | 50 | 52.0 | 104 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 55.7 | 111 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 58.6 | 117 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 49.8 | 100 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 52.3 | 105 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 50.7 | 101 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 45.6 | 91 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 54.8 | 110 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 52.6 | 105 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 52.8 | 106 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 44.3 | 89 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 41.9 | 84 | 70-130 |
| | m,p-Xylene | 100 | 116 | 116 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 56.4 | 113 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 173 | 115 | 70-130 |

# Blank Spike Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-BS | V2120.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-3, MC3644-4

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1836-BS | K54951.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| MSK1836-BSD | K54952.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-1

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 2280 | 91 | 2320 | 93 | 2 | 70-130/25 |
| 107-02-8 | Acrolein | 12500 | 10300 | 82 | 10400 | 83 | 1 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 2500 | 2480 | 99 | 2420 | 97 | 2 | 70-130/25 |
| 71-43-2 | Benzene | 2500 | 2480 | 99 | 2350 | 94 | 5 | 70-130/25 |
| 108-86-1 | Bromobenzene | 2500 | 2580 | 103 | 2440 | 98 | 6 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 2500 | 2460 | 98 | 2390 | 96 | 3 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 2500 | 2610 | 104 | 2500 | 100 | 4 | 70-130/25 |
| 75-25-2 | Bromoform | 2500 | 2740 | 110 | 2700 | 108 | 1 | 70-130/25 |
| 74-83-9 | Bromomethane | 2500 | 2160 | 86 | 2080 | 83 | 4 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 2500 | 100 | 2550 | 102 | 2 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 2500 | 2710 | 108 | 2570 | 103 | 5 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2660 | 106 | 2510 | 100 | 6 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2580 | 103 | 2420 | 97 | 6 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 2500 | 2300 | 92 | 2140 | 86 | 7 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2520 | 101 | 2360 | 94 | 7 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 2500 | 2680 | 107 | 2570 | 103 | 4 | 70-130/25 |
| 75-00-3 | Chloroethane | 2500 | 2340 | 94 | 2190 | 88 | 7 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 2220 | 89 | 2160 | 86 | 3 | 10-160/25 |
| 67-66-3 | Chloroform | 2500 | 2480 | 99 | 2370 | 95 | 5 | 70-130/25 |
| 74-87-3 | Chloromethane | 2500 | 1820 | 73 | 1770 | 71 | 3 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2490 | 100 | 2360 | 94 | 5 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2610 | 104 | 2460 | 98 | 6 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 2500 | 2320 | 93 | 2220 | 89 | 4 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 2500 | 2790 | 112 | 2700 | 108 | 3 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 2500 | 2640 | 106 | 2610 | 104 | 1 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2660 | 106 | 2540 | 102 | 5 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2630 | 105 | 2510 | 100 | 5 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2620 | 105 | 2510 | 100 | 4 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 1740 | 70 | 1610 | 64* [a] | 8 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2440 | 98 | 2340 | 94 | 4 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2390 | 96 | 2340 | 94 | 2 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2450 | 98 | 2330 | 93 | 5 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2430 | 97 | 2300 | 92 | 5 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2490 | 100 | 2330 | 93 | 7 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2490 | 100 | 2390 | 96 | 4 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2560 | 102 | 2500 | 100 | 2 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1836-BS | K54951.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| MSK1836-BSD | K54952.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-1

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2790 | 112 | 2620 | 105 | 6 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2530 | 101 | 2370 | 95 | 7 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2580 | 103 | 2520 | 101 | 2 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2810 | 112 | 2710 | 108 | 4 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 12500 | 12200 | 98 | 12100 | 97 | 1 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2610 | 104 | 2540 | 102 | 3 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 2500 | 2710 | 108 | 2580 | 103 | 5 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2680 | 107 | 2510 | 100 | 7 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 2500 | 2700 | 108 | 2650 | 106 | 2 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 2500 | 3010 | 120 | 2830 | 113 | 6 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2730 | 109 | 2550 | 102 | 7 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2400 | 96 | 2370 | 95 | 1 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 2600 | 104 | 2540 | 102 | 2 | 70-130/25 |
| 74-95-3 | Methylene bromide | 2500 | 2470 | 99 | 2430 | 97 | 2 | 70-130/25 |
| 75-09-2 | Methylene chloride | 2500 | 2540 | 102 | 2380 | 95 | 7 | 70-130/25 |
| 91-20-3 | Naphthalene | 2500 | 2470 | 99 | 2370 | 95 | 4 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 2500 | 2600 | 104 | 2470 | 99 | 5 | 70-130/25 |
| 100-42-5 | Styrene | 2500 | 2780 | 111 | 2700 | 108 | 3 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2710 | 108 | 2640 | 106 | 3 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2590 | 104 | 2560 | 102 | 1 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 2500 | 2720 | 109 | 2540 | 102 | 7 | 70-130/25 |
| 108-88-3 | Toluene | 2500 | 2570 | 103 | 2420 | 97 | 6 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 2430 | 97 | 2290 | 92 | 6 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2570 | 103 | 2450 | 98 | 5 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2520 | 101 | 2380 | 95 | 6 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2600 | 104 | 2540 | 102 | 2 | 70-130/25 |
| 79-01-6 | Trichloroethene | 2500 | 2540 | 102 | 2390 | 96 | 6 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2290 | 92 | 2160 | 86 | 6 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2540 | 102 | 2490 | 100 | 2 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2560 | 102 | 2410 | 96 | 6 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2540 | 102 | 2420 | 97 | 5 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 2500 | 1840 | 74 | 1810 | 72 | 2 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 2500 | 1810 | 72 | 1740 | 70 | 4 | 70-130/25 |
| | m,p-Xylene | 5000 | 5500 | 110 | 5260 | 105 | 4 | 70-130/25 |
| 95-47-6 | o-Xylene | 2500 | 2700 | 108 | 2590 | 104 | 4 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 7500 | 8210 | 109 | 7850 | 105 | 4 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1836-BS | K54951.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| MSK1836-BSD | K54952.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-1

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 105% | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 110% | 104% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 104% | 100% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1403-BS | M43597.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| MSM1403-BSD | M43598.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-2, MC3644-5

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 69.6 | 139* a | 53.2 | 106 | 27* a | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 249 | 100 | 180 | 72 | 32* a | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 197 | 394* b | 219 | 438* b | 11 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 50.7 | 101 | 50.9 | 102 | 0 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 55.6 | 111 | 56.6 | 113 | 2 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 53.5 | 107 | 53.0 | 106 | 1 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 57.2 | 114 | 53.3 | 107 | 7 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 58.6 | 117 | 54.6 | 109 | 7 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 46.7 | 93 | 44.1 | 88 | 6 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 53.7 | 107 | 54.6 | 109 | 2 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 56.3 | 113 | 56.9 | 114 | 1 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 55.8 | 112 | 57.5 | 115 | 3 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 53.2 | 106 | 55.5 | 111 | 4 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 46.7 | 93 | 43.8 | 88 | 6 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 62.4 | 125 | 60.4 | 121 | 3 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 58.2 | 116 | 56.7 | 113 | 3 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 47.6 | 95 | 44.7 | 89 | 6 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 29.5 | 59* a | 28.7 | 57* a | 3 | 70-130/25 |
| 67-66-3 | Chloroform | 50 | 52.0 | 104 | 50.2 | 100 | 4 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 36.6 | 73 | 35.6 | 71 | 3 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 48.8 | 98 | 52.5 | 105 | 7 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 51.3 | 103 | 53.5 | 107 | 4 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 45.5 | 91 | 47.3 | 95 | 4 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 68.5 | 137* a | 63.1 | 126 | 8 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 59.1 | 118 | 55.5 | 111 | 6 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 56.2 | 112 | 55.9 | 112 | 1 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 56.2 | 112 | 55.7 | 111 | 1 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 54.4 | 109 | 54.6 | 109 | 0 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 50.2 | 100 | 48.0 | 96 | 4 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 44.8 | 90 | 47.8 | 96 | 6 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 54.3 | 109 | 52.5 | 105 | 3 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 53.6 | 107 | 53.2 | 106 | 1 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 51.0 | 102 | 48.5 | 97 | 5 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 49.3 | 99 | 51.6 | 103 | 5 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 53.4 | 107 | 46.4 | 93 | 14 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 59.4 | 119 | 52.9 | 106 | 12 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1403-BS | M43597.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| MSM1403-BSD | M43598.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-2, MC3644-5

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 58.8 | 118 | 56.5 | 113 | 4 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 56.5 | 113 | 54.3 | 109 | 4 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 51.8 | 104 | 50.2 | 100 | 3 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 57.1 | 114 | 54.6 | 109 | 4 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 213 | 85 | 192 | 77 | 10 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 52.2 | 104 | 48.8 | 98 | 7 | 77-137/25 |
| 100-41-4 | Ethylbenzene | 50 | 58.5 | 117 | 57.4 | 115 | 2 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 73.8 | 148* a | 73.2 | 146* a | 1 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 68.2 | 136* a | 52.4 | 105 | 26* a | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 58.1 | 116 | 63.1 | 126 | 8 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 58.0 | 116 | 58.6 | 117 | 1 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 43.9 | 88 | 43.4 | 87 | 1 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 47.7 | 95 | 45.7 | 91 | 4 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 55.5 | 111 | 49.7 | 99 | 11 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 50.0 | 100 | 49.2 | 98 | 2 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 51.0 | 102 | 48.9 | 98 | 4 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 50.7 | 101 | 54.4 | 109 | 7 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 58.2 | 116 | 56.6 | 113 | 3 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 61.8 | 124 | 60.1 | 120 | 3 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 41.6 | 83 | 48.0 | 96 | 14 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 70.2 | 140* a | 66.5 | 133* a | 5 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 58.8 | 118 | 56.4 | 113 | 4 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 57.2 | 114 | 57.2 | 114 | 0 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 60.7 | 121 | 60.4 | 121 | 0 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 56.4 | 113 | 54.1 | 108 | 4 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 56.1 | 112 | 54.8 | 110 | 2 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 57.7 | 115 | 52.2 | 104 | 10 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 55.1 | 110 | 52.6 | 105 | 5 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 42.4 | 85 | 47.0 | 94 | 10 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 51.4 | 103 | 52.6 | 105 | 2 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 50.0 | 100 | 53.0 | 106 | 6 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 27.6 | 55* a | 30.1 | 60* a | 9 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 34.6 | 69* a | 34.4 | 69* a | 1 | 70-130/25 |
| | m,p-Xylene | 100 | 123 | 123 | 121 | 121 | 2 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 60.9 | 122 | 61.0 | 122 | 0 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 184 | 123 | 182 | 121 | 1 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1403-BS | M43597.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| MSM1403-BSD | M43598.D | 1 | 09/27/11 | TD | n/a | n/a | MSM1403 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-2, MC3644-5

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | 86% | 70-130% |
| 2037-26-5 | Toluene-D8 | 93% | 94% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 86% | 96% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3644-1MS | K54966.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| MC3644-1MSD | K54967.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| MC3644-1 | K54965.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-1

| CAS No. | Compound | MC3644-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 11600 | 12000 | 104 | 12900 | 111 | 7 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 57900 | 48600 | 84 | 53200 | 92 | 9 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 11600 | 11000 | 95 | 11700 | 101 | 6 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 11600 | 11100 | 96 | 11900 | 103 | 7 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 11600 | 11300 | 98 | 12200 | 105 | 8 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 11600 | 11000 | 95 | 12000 | 104 | 9 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 11600 | 11700 | 101 | 12400 | 107 | 6 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 11600 | 12600 | 109 | 13400 | 116 | 6 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 11600 | 9500 | 82 | 10400 | 90 | 9 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 11600 | 12300 | 106 | 12200 | 105 | 1 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | 516 | J | 11600 | 12700 | 105 | 13700 | 114 | 8 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | 196 | J | 11600 | 11900 | 101 | 13000 | 111 | 9 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 11600 | 11300 | 98 | 12400 | 107 | 9 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 11600 | 9640 | 83 | 10600 | 92 | 9 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 11600 | 10900 | 94 | 11700 | 101 | 7 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 11600 | 12000 | 104 | 12900 | 111 | 7 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 11600 | 10000 | 86 | 10900 | 94 | 9 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 11600 | 10200 | 88 | 10900 | 94 | 7 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 11600 | 11100 | 96 | 12000 | 104 | 8 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 11600 | 7880 | 68* a | 8530 | 74 | 8 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 11600 | 11000 | 95 | 11900 | 103 | 8 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 11600 | 11400 | 98 | 12300 | 106 | 8 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 11600 | 10300 | 89 | 12200 | 105 | 17 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 11600 | 12500 | 108 | 13300 | 115 | 6 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 11600 | 12000 | 104 | 12700 | 110 | 6 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 11600 | 11700 | 101 | 12700 | 110 | 8 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 11600 | 11600 | 100 | 12500 | 108 | 7 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 11600 | 11700 | 101 | 12600 | 109 | 7 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 11600 | 7210 | 62* a | 7880 | 68* a | 9 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 11600 | 10800 | 93 | 11800 | 102 | 9 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 11600 | 10800 | 93 | 11400 | 98 | 5 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 11600 | 10700 | 92 | 11700 | 101 | 9 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 11600 | 10600 | 92 | 11500 | 99 | 8 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 11600 | 10700 | 92 | 11800 | 102 | 10 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 11600 | 11100 | 96 | 11800 | 102 | 6 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 11600 | 11500 | 99 | 12100 | 105 | 5 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3644-1MS | K54966.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| MC3644-1MSD | K54967.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| MC3644-1 | K54965.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-1

| CAS No. | Compound | MC3644-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 11600 | 11900 | 103 | 12900 | 111 | 8 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 11600 | 11200 | 97 | 12000 | 104 | 7 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 11600 | 11400 | 98 | 12200 | 105 | 7 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 11600 | 12200 | 105 | 12900 | 111 | 6 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 57900 | 53600 | 93 | 58600 | 101 | 9 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 11600 | 13200 | 114 | 13600 | 117 | 3 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 1090 | | 11600 | 13200 | 105 | 14100 | 112 | 7 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 11600 | 13200 | 114 | 14100 | 122 | 7 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 11600 | 13400 | 116 | 14200 | 123 | 6 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | 318 | J | 11600 | 13600 | 115 | 14600 | 123 | 7 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | 322 | J | 11600 | 12400 | 104 | 13400 | 113 | 8 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 11600 | 10900 | 94 | 11700 | 101 | 7 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 11600 | 14100 | 122 | 15100 | 130 | 7 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 11600 | 11000 | 95 | 11800 | 102 | 7 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 11600 | 11100 | 96 | 12000 | 104 | 8 | 70-130/30 |
| 91-20-3 | Naphthalene | 3910 | | 11600 | 15900 | 104 | 17300 | 116 | 8 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 383 | J | 11600 | 11900 | 99 | 12800 | 107 | 7 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 11600 | 12600 | 109 | 13500 | 117 | 7 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 11600 | 12200 | 105 | 13000 | 112 | 6 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 11600 | 11800 | 102 | 12600 | 109 | 7 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 11600 | 11900 | 103 | 12800 | 111 | 7 | 70-130/30 |
| 108-88-3 | Toluene | 81.7 | J | 11600 | 11600 | 100 | 12300 | 106 | 6 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 11600 | 11900 | 103 | 13200 | 114 | 10 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 11600 | 12100 | 105 | 12900 | 111 | 6 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 11600 | 11000 | 95 | 12000 | 104 | 9 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 11600 | 11800 | 102 | 12600 | 109 | 7 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 11600 | 11400 | 98 | 12400 | 107 | 8 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 11600 | 9630 | 83 | 10700 | 92 | 11 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 11600 | 11300 | 98 | 12100 | 105 | 7 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1740 | | 11600 | 13000 | 97 | 14000 | 106 | 7 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 370 | J | 11600 | 11500 | 96 | 12600 | 106 | 9 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 11600 | 7920 | 68* a | 8070 | 70 | 2 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 11600 | 9960 | 86 | 10900 | 94 | 9 | 70-130/30 |
| | m,p-Xylene | 1910 | | 23200 | 26100 | 104 | 27900 | 112 | 7 | 70-130/30 |
| 95-47-6 | o-Xylene | 197 | J | 11600 | 12100 | 103 | 13100 | 111 | 8 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 2110 | | 34700 | 38300 | 104 | 41000 | 112 | 7 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, 1L

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3644-1MS | K54966.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| MC3644-1MSD | K54967.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| MC3644-1 | K54965.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-1

| CAS No. | Surrogate Recoveries | MS | MSD | MC3644-1 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 97% | 105% | 111% | 70-130% |
| 2037-26-5 | Toluene-D8 | 100% | 107% | 105% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | 108% | 108% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3751-4MS | V2134.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4MSD | V2135.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4 | V2130.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-3, MC3644-4

| CAS No. | Compound | MC3751-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 17.6 | | 128 | 112 | 74 | 123 | 79 | 9 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 638 | 1830 | 287* [a] | 1780 | 267* [a] | 3 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 128 | 695 | 545* [a] | 746 | 559* [a] | 7 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 128 | 126 | 99 | 134 | 100 | 6 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 128 | 115 | 90 | 123 | 92 | 7 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 128 | 123 | 96 | 133 | 100 | 8 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 128 | 119 | 93 | 129 | 97 | 8 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 128 | 130 | 102 | 141 | 106 | 8 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 128 | 103 | 81 | 111 | 83 | 7 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 128 | 180 | 141* [b] | 203 | 152* [b] | 12 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 128 | 134 | 105 | 143 | 107 | 6 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 128 | 121 | 95 | 129 | 97 | 6 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 128 | 115 | 90 | 124 | 93 | 8 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 128 | 104 | 82 | 112 | 84 | 7 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 128 | 103 | 81 | 110 | 82 | 7 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 128 | 128 | 100 | 137 | 103 | 7 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 128 | 121 | 95 | 129 | 97 | 6 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 128 | ND | 0* [b] | ND | 0* [b] | nc | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 128 | 118 | 93 | 129 | 97 | 9 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 128 | 109 | 85 | 117 | 88 | 7 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 128 | 114 | 89 | 121 | 91 | 6 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 128 | 117 | 92 | 124 | 93 | 6 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 128 | 166 | 130 | 181 | 136* [b] | 9 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 128 | 126 | 99 | 138 | 103 | 9 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 128 | 139 | 109 | 150 | 112 | 8 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 128 | 129 | 101 | 137 | 103 | 6 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 128 | 119 | 93 | 125 | 94 | 5 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 128 | 116 | 91 | 124 | 93 | 7 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 128 | 103 | 81 | 107 | 80 | 4 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 128 | 125 | 98 | 135 | 101 | 8 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 128 | 125 | 98 | 135 | 101 | 8 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 128 | 122 | 96 | 130 | 97 | 6 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 128 | 118 | 93 | 128 | 96 | 8 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 128 | 118 | 93 | 126 | 94 | 7 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 128 | 124 | 97 | 133 | 100 | 7 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 128 | 131 | 103 | 141 | 106 | 7 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3751-4MS | V2134.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4MSD | V2135.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4 | V2130.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-3, MC3644-4

| CAS No. | Compound | MC3751-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 128 | 119 | 93 | 130 | 97 | 9 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 128 | 116 | 91 | 124 | 93 | 7 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 128 | 126 | 99 | 137 | 103 | 8 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 128 | 141 | 111 | 152 | 114 | 8 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 638 | 824 | 129 | 961 | 144* [b] | 15 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 128 | 161 | 126 | 173 | 130 | 7 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 2.9 | | 128 | 132 | 101 | 141 | 104 | 7 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 128 | 117 | 92 | 125 | 94 | 7 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 128 | 198 | 155* [b] | 218 | 163* [b] | 10 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 128 | 137 | 107 | 148 | 111 | 8 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 128 | 126 | 99 | 135 | 101 | 7 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 128 | 131 | 103 | 144 | 108 | 9 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 128 | 208 | 163* [b] | 225 | 169* [b] | 8 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 128 | 132 | 104 | 145 | 109 | 9 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 128 | 130 | 102 | 141 | 106 | 8 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 128 | 160 | 125 | 171 | 128 | 7 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 0.77 | J | 128 | 122 | 95 | 129 | 96 | 6 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 128 | 126 | 99 | 133 | 100 | 5 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 128 | 118 | 93 | 128 | 96 | 8 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 128 | 159 | 125 | 172 | 129 | 8 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 128 | 118 | 93 | 125 | 94 | 6 | 70-130/30 |
| 108-88-3 | Toluene | 7.7 | | 128 | 122 | 90 | 130 | 92 | 6 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 128 | 127 | 100 | 133 | 100 | 5 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 128 | 132 | 104 | 138 | 103 | 4 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 128 | 108 | 85 | 118 | 88 | 9 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 128 | 134 | 105 | 144 | 108 | 7 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 128 | 114 | 89 | 121 | 91 | 6 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 128 | 96.4 | 76 | 102 | 76 | 6 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 128 | 157 | 123 | 174 | 130 | 10 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 0.88 | J | 128 | 118 | 92 | 125 | 93 | 6 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 128 | 116 | 91 | 123 | 92 | 6 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 128 | 119 | 93 | 119 | 89 | 0 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 128 | 91.5 | 72 | 97.4 | 73 | 6 | 70-130/30 |
| | m,p-Xylene | ND | | 255 | 260 | 102 | 278 | 104 | 7 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 128 | 126 | 99 | 137 | 103 | 8 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 383 | 386 | 101 | 415 | 104 | 7 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3751-4MS | V2134.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4MSD | V2135.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4 | V2130.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-3, MC3644-4

| CAS No. | Surrogate Recoveries | MS | MSD | MC3751-4 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dihromofluoromethane | 99% | 99% | 92% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 97% | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | 97% | 95% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3779-8MS | M43611.D | 5 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| MC3779-8MSD | M43612.D | 5 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| MC3779-8 | M43610.D | 5 | 09/27/11 | TD | n/a | n/a | MSM1403 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-2, MC3644-5

| CAS No. | Compound | MC3779-8 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 250 | 175 | 70 | 176 | 70 | 1 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 1250 | 2050 | 164* [a] | 2140 | 171* [a] | 4 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 250 | 1010 | 404* [a] | 971 | 388* [a] | 4 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 250 | 241 | 96 | 255 | 102 | 6 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 250 | 273 | 109 | 276 | 110 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 250 | 261 | 104 | 260 | 104 | 0 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 250 | 278 | 111 | 282 | 113 | 1 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 250 | 260 | 104 | 271 | 108 | 4 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 250 | 207 | 83 | 214 | 86 | 3 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 250 | 276 | 110 | 280 | 112 | 1 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 250 | 282 | 113 | 268 | 107 | 5 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 250 | 282 | 113 | 267 | 107 | 5 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 250 | 271 | 108 | 257 | 103 | 5 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 250 | 210 | 84 | 219 | 88 | 4 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 250 | 287 | 115 | 310 | 124 | 8 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 250 | 273 | 109 | 280 | 112 | 3 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 250 | 215 | 86 | 208 | 83 | 3 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 250 | 37.2 | 15* [b] | ND | 0* [b] | 200* [c] | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 250 | 250 | 100 | 248 | 99 | 1 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 250 | 168 | 67* [b] | 173 | 69* [b] | 3 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 250 | 256 | 102 | 241 | 96 | 6 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 250 | 261 | 104 | 251 | 100 | 4 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 250 | 238 | 95 | 212 | 85 | 12 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 250 | 294 | 118 | 299 | 120 | 2 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 250 | 255 | 102 | 283 | 113 | 10 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 250 | 275 | 110 | 271 | 108 | 1 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 250 | 274 | 110 | 271 | 108 | 1 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 250 | 265 | 106 | 261 | 104 | 2 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 250 | 227 | 91 | 239 | 96 | 5 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 250 | 214 | 86 | 230 | 92 | 7 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 250 | 256 | 102 | 267 | 107 | 4 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 250 | 252 | 101 | 258 | 103 | 2 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 250 | 250 | 100 | 240 | 96 | 4 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 250 | 254 | 102 | 238 | 95 | 7 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 250 | 255 | 102 | 262 | 105 | 3 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 250 | 249 | 100 | 273 | 109 | 9 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3779-8MS | M43611.D | 5 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| MC3779-8MSD | M43612.D | 5 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| MC3779-8 | M43610.D | 5 | 09/27/11 | TD | n/a | n/a | MSM1403 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-2, MC3644-5

| CAS No. | Compound | MC3779-8 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 250 | 285 | 114 | 288 | 115 | 1 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 250 | 263 | 105 | 283 | 113 | 7 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 250 | 229 | 92 | 258 | 103 | 12 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 250 | 255 | 102 | 281 | 112 | 10 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 1250 | 957 | 77 | 1030 | 82 | 7 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 250 | 228 | 91 | 253 | 101 | 10 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 250 | 281 | 112 | 278 | 111 | 1 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 250 | 363 | 145* [b] | 382 | 153* [b] | 5 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 250 | 219 | 88 | 251 | 100 | 14 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 250 | 313 | 125 | 294 | 118 | 6 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 250 | 291 | 116 | 278 | 111 | 5 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | 401 | | 250 | 608 | 83 | 567 | 66* [b] | 7 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 250 | 217 | 87 | 243 | 97 | 11 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 250 | 259 | 104 | 273 | 109 | 5 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 250 | 237 | 95 | 226 | 90 | 5 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 250 | 252 | 101 | 250 | 100 | 1 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 250 | 268 | 107 | 252 | 101 | 6 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 250 | 269 | 108 | 270 | 108 | 0 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 250 | 296 | 118 | 294 | 118 | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 250 | 234 | 94 | 212 | 85 | 10 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 250 | 317 | 127 | 335 | 134* [b] | 6 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 250 | 270 | 108 | 289 | 116 | 7 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 250 | 281 | 112 | 292 | 117 | 4 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 250 | 298 | 119 | 311 | 124 | 4 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 250 | 269 | 108 | 273 | 109 | 1 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 250 | 245 | 98 | 277 | 111 | 12 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 250 | 273 | 109 | 284 | 114 | 4 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 250 | 254 | 102 | 264 | 106 | 4 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 250 | 228 | 91 | 208 | 83 | 9 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 250 | 260 | 104 | 249 | 100 | 4 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 250 | 262 | 105 | 246 | 98 | 6 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 250 | 137 | 55* [b] | 145 | 58* [b] | 6 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 250 | 173 | 69* [b] | 169 | 68* [b] | 2 | 70-130/30 |
| | m,p-Xylene | ND | | 500 | 589 | 118 | 579 | 116 | 2 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 250 | 298 | 119 | 283 | 113 | 5 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 750 | 887 | 118 | 862 | 115 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3779-8MS | M43611.D | 5 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| MC3779-8MSD | M43612.D | 5 | 09/27/11 | TD | n/a | n/a | MSM1403 |
| MC3779-8 | M43610.D | 5 | 09/27/11 | TD | n/a | n/a | MSM1403 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3644-2, MC3644-5

| CAS No. | Surrogate Recoveries | MS | MSD | MC3779-8 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 87% | 85% | 84% | 70-130% |
| 2037-26-5 | Toluene-D8 | 92% | 98% | 93% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 88% | 92% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(c) High RPD due to possible matrix interference and/or sample non-homogeneity.

# Volatile Internal Standard Area Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSK1836-CC1831 | Injection Date: | 09/22/11 |
| Lab File ID: | K54950.D | Injection Time: | 09:36 |
| Instrument ID: | GCMSK | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 284771 | 8.86 | 374706 | 9.71 | 182009 | 12.97 | 213537 | 15.53 | 86745 | 6.48 |
| Upper Limit [a] | 569542 | 9.36 | 749412 | 10.21 | 364018 | 13.47 | 427074 | 16.03 | 173490 | 6.98 |
| Lower Limit [b] | 142386 | 8.36 | 187353 | 9.21 | 91005 | 12.47 | 106769 | 15.03 | 43373 | 5.98 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSK1836-BS | 283257 | 8.87 | 372984 | 9.72 | 182617 | 12.97 | 214503 | 15.53 | 90683 | 6.48 |
| MSK1836-BSD | 287692 | 8.87 | 379674 | 9.72 | 184832 | 12.97 | 219075 | 15.53 | 90750 | 6.48 |
| MSK1836-MB | 297002 | 8.87 | 405632 | 9.72 | 187966 | 12.97 | 210733 | 15.53 | 94608 | 6.48 |
| ZZZZZZ | 298074 | 8.86 | 402529 | 9.71 | 188239 | 12.97 | 217943 | 15.53 | 91243 | 6.50 |
| MC3762-9 | 297606 | 8.87 | 405504 | 9.72 | 187938 | 12.97 | 211272 | 15.53 | 100301 | 6.49 |
| ZZZZZZ | 288885 | 8.87 | 389422 | 9.72 | 184259 | 12.97 | 203313 | 15.53 | 84983 | 6.48 |
| ZZZZZZ | 283951 | 8.86 | 392446 | 9.71 | 182527 | 12.97 | 204635 | 15.53 | 91400 | 6.48 |
| ZZZZZZ | 289532 | 8.87 | 389697 | 9.72 | 184306 | 12.97 | 204396 | 15.53 | 92924 | 6.48 |
| ZZZZZZ | 285633 | 8.87 | 387225 | 9.72 | 180440 | 12.97 | 196408 | 15.53 | 91931 | 6.48 |
| MC3762-9MS | 274699 | 8.86 | 365295 | 9.71 | 180073 | 12.97 | 212416 | 15.53 | 92501 | 6.48 |
| MC3762-9MSD | 279781 | 8.87 | 374315 | 9.71 | 183582 | 12.97 | 214175 | 15.53 | 94459 | 6.48 |
| ZZZZZZ | 289466 | 8.87 | 390395 | 9.72 | 185474 | 12.97 | 204248 | 15.53 | 91809 | 6.48 |
| ZZZZZZ | 286355 | 8.87 | 391024 | 9.72 | 182631 | 12.97 | 201344 | 15.53 | 90817 | 6.48 |
| MC3644-1 | 283138 | 8.87 | 378718 | 9.72 | 178316 | 12.97 | 213222 | 15.53 | 86601 | 6.48 |
| MC3644-1MS | 303383 | 8.87 | 396965 | 9.72 | 195312 | 12.97 | 234199 | 15.53 | 95662 | 6.48 |
| MC3644-1MSD | 288739 | 8.87 | 381618 | 9.72 | 187479 | 12.97 | 222708 | 15.53 | 91508 | 6.48 |
| ZZZZZZ | 296694 | 8.87 | 398088 | 9.72 | 172345 | 12.97 | 210295 | 15.53 | 90059 | 6.48 |
| ZZZZZZ | 303759 | 8.87 | 409440 | 9.72 | 175827 | 12.97 | 212447 | 15.53 | 94941 | 6.48 |
| ZZZZZZ | 295203 | 8.87 | 392377 | 9.72 | 186411 | 12.98 | 207558 | 15.53 | 92937 | 6.48 |
| ZZZZZZ | 302409 | 8.87 | 416296 | 9.72 | 191707 | 12.97 | 220478 | 15.53 | 102767 | 6.48 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1403-CC1370 | Injection Date: | 09/27/11 |
| Lab File ID: | M43596.D | Injection Time: | 10:59 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 120352 | 9.19 | 168216 | 10.07 | 82647 | 13.34 | 112277 | 15.90 | 37467 | 6.74 |
| Upper Limit [a] | 240704 | 9.69 | 336432 | 10.57 | 165294 | 13.84 | 224554 | 16.40 | 74934 | 7.24 |
| Lower Limit [b] | 60176 | 8.69 | 84108 | 9.57 | 41324 | 12.84 | 56139 | 15.40 | 18734 | 6.24 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1404-BS | 123970 | 9.19 | 182075 | 10.07 | 82381 | 13.34 | 116872 | 15.90 | 35659 | 6.74 |
| MSM1404-BSD | 125673 | 9.19 | 185223 | 10.07 | 88363 | 13.34 | 114672 | 15.90 | 36851 | 6.74 |
| MSM1404-MB | 123065 | 9.19 | 168397 | 10.07 | 82305 | 13.34 | 101016 | 15.90 | 35988 | 6.74 |
| ZZZZZZ | 116469 | 9.19 | 157239 | 10.07 | 83010 | 13.34 | 100944 | 15.90 | 34441 | 6.74 |
| ZZZZZZ | 115967 | 9.19 | 168088 | 10.07 | 81780 | 13.34 | 107415 | 15.90 | 35338 | 6.73 |
| ZZZZZZ | 136288 | 9.19 | 199074 | 10.07 | 93960 | 13.34 | 119146 | 15.90 | 42053 | 6.74 |
| ZZZZZZ | 137053 | 9.19 | 197660 | 10.07 | 89198 | 13.34 | 112053 | 15.90 | 36707 | 6.74 |
| ZZZZZZ | 122428 | 9.19 | 174755 | 10.07 | 81303 | 13.34 | 109062 | 15.90 | 33695 | 6.74 |
| ZZZZZZ | 114549 | 9.19 | 169004 | 10.07 | 81229 | 13.34 | 107922 | 15.90 | 33620 | 6.74 |
| ZZZZZZ | 123364 | 9.19 | 178373 | 10.07 | 80448 | 13.34 | 110558 | 15.90 | 32905 | 6.74 |
| MC3779-8 | 117251 | 9.19 | 174588 | 10.07 | 84587 | 13.34 | 106828 | 15.90 | 36773 | 6.74 |
| MC3779-8MS | 124517 | 9.19 | 187646 | 10.07 | 89543 | 13.34 | 113882 | 15.90 | 35796 | 6.74 |
| MC3779-8MSD | 126198 | 9.19 | 176700 | 10.07 | 84953 | 13.34 | 112530 | 15.90 | 35119 | 6.74 |
| ZZZZZZ | 127518 | 9.19 | 183502 | 10.07 | 85421 | 13.34 | 108002 | 15.90 | 34072 | 6.74 |
| ZZZZZZ | 115965 | 9.19 | 165311 | 10.07 | 78356 | 13.34 | 106686 | 15.90 | 34815 | 6.74 |
| ZZZZZZ | 121473 | 9.19 | 170149 | 10.07 | 81702 | 13.34 | 111932 | 15.90 | 35319 | 6.74 |
| ZZZZZZ | 121199 | 9.19 | 174071 | 10.07 | 79893 | 13.34 | 113181 | 15.90 | 33932 | 6.75 |
| ZZZZZZ | 120230 | 9.19 | 172059 | 10.07 | 81878 | 13.34 | 108102 | 15.90 | 35559 | 6.74 |
| ZZZZZZ | 123136 | 9.19 | 166743 | 10.07 | 83939 | 13.34 | 108162 | 15.90 | 36665 | 6.74 |
| MC3644-5 | 113382 | 9.19 | 167441 | 10.07 | 78404 | 13.34 | 102607 | 15.90 | 33492 | 6.74 |
| MC3644-2 | 114878 | 9.19 | 164228 | 10.07 | 78120 | 13.34 | 100025 | 15.90 | 33188 | 6.74 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1404-CC1371 | Injection Date: | 09/27/11 |
| Lab File ID: | M43596A.D | Injection Time: | 10:59 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 120352 | 9.19 | 168216 | 10.07 | 82647 | 13.34 | 112277 | 15.90 | 37467 | 6.74 |
| Upper Limit [a] | 240704 | 9.69 | 336432 | 10.57 | 165294 | 13.84 | 224554 | 16.40 | 74934 | 7.24 |
| Lower Limit [b] | 60176 | 8.69 | 84108 | 9.57 | 41324 | 12.84 | 56139 | 15.40 | 18734 | 6.24 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1403-BS | 123970 | 9.19 | 182075 | 10.07 | 82381 | 13.34 | 116872 | 15.90 | 35659 | 6.74 |
| MSM1403-BSD | 125673 | 9.19 | 185223 | 10.07 | 88363 | 13.34 | 114672 | 15.90 | 36851 | 6.74 |
| MSM1403-MB | 123065 | 9.19 | 168397 | 10.07 | 82305 | 13.34 | 101016 | 15.90 | 35988 | 6.74 |
| ZZZZZZ | 114585 | 9.19 | 160862 | 10.07 | 78469 | 13.34 | 102118 | 15.90 | 36126 | 6.73 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV93-CC67 | Injection Date: | 09/27/11 |
| Lab File ID: | V2117.D | Injection Time: | 08:24 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 382176 | 6.54 | 577011 | 7.72 | 304263 | 11.08 | 309226 | 13.31 | 114564 | 3.51 |
| Upper Limit [a] | 764352 | 7.04 | 1154022 | 8.22 | 608526 | 11.58 | 618452 | 13.81 | 229128 | 4.01 |
| Lower Limit [b] | 191088 | 6.04 | 288506 | 7.22 | 152132 | 10.58 | 154613 | 12.81 | 57282 | 3.01 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSV93-BS | 386248 | 6.53 | 582182 | 7.72 | 306946 | 11.08 | 310085 | 13.31 | 121956 | 3.51 |
| MSV93-MB | 366766 | 6.53 | 570512 | 7.72 | 307573 | 11.08 | 316187 | 13.31 | 179003 | 3.50 |
| ZZZZZZ | 379165 | 6.53 | 583490 | 7.72 | 324173 | 11.07 | 321761 | 13.31 | 154223 | 3.50 |
| ZZZZZZ | 408150 | 6.54 | 621283 | 7.72 | 389484 | 11.07 | 328323 | 13.31 | 172368 | 3.52 |
| MC3644-3 | 390503 | 6.54 | 600499 | 7.72 | 326888 | 11.08 | 336997 | 13.31 | 161133 | 3.50 |
| MC3644-4 | 400328 | 6.54 | 609421 | 7.72 | 323373 | 11.08 | 333963 | 13.31 | 160035 | 3.51 |
| ZZZZZZ | 411549 | 6.53 | 619133 | 7.72 | 317698 | 11.08 | 264849 | 13.31 | 172752 | 3.52 |
| ZZZZZZ | 407282 | 6.53 | 641252 | 7.72 | 339217 | 11.08 | 340005 | 13.32 | 76721 | 3.79 |
| ZZZZZZ | 408895 | 6.54 | 638281 | 7.73 | 339575 | 11.08 | 340895 | 13.31 | 163280 | 3.51 |
| MC3751-4 | 381330 | 6.54 | 586351 | 7.72 | 314722 | 11.08 | 317386 | 13.31 | 168953 | 3.50 |
| ZZZZZZ | 375919 | 6.54 | 575912 | 7.72 | 311706 | 11.08 | 309440 | 13.31 | 169666 | 3.51 |
| ZZZZZZ | 364332 | 6.54 | 563000 | 7.72 | 290084 | 11.08 | 300080 | 13.31 | 102976 | 3.49 |
| ZZZZZZ | 380161 | 6.54 | 589035 | 7.73 | 320498 | 11.08 | 322674 | 13.31 | 166030 | 3.51 |
| MC3751-4MS | 394375 | 6.53 | 597344 | 7.72 | 318579 | 11.08 | 324283 | 13.31 | 175067 | 3.50 |
| MC3751-4MSD | 409918 | 6.53 | 627814 | 7.72 | 335314 | 11.08 | 342075 | 13.31 | 188954 | 3.50 |
| ZZZZZZ | 385525 | 6.53 | 589564 | 7.72 | 314630 | 11.08 | 324006 | 13.31 | 170885 | 3.50 |
| ZZZZZZ | 383427 | 6.53 | 589990 | 7.72 | 316894 | 11.07 | 322911 | 13.31 | 163560 | 3.49 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Surrogate Recovery Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3644-2 | M43620.D | 84.0 | 95.0 | 92.0 |
| MC3644-5 | M43619.D | 85.0 | 98.0 | 92.0 |
| MC3779-8MS | M43611.D | 87.0 | 92.0 | 95.0 |
| MC3779-8MSD | M43612.D | 85.0 | 98.0 | 88.0 |
| MSM1403-BS | M43597.D | 85.0 | 93.0 | 86.0 |
| MSM1403-BSD | M43598.D | 86.0 | 94.0 | 96.0 |
| MSM1403-MB | M43599.D | 88.0 | 96.0 | 95.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3644-1 | K54965.D | 111.0 | 105.0 | 108.0 |
| MC3644-3 | V2124.D | 92.0 | 97.0 | 95.0 |
| MC3644-4 | V2125.D | 91.0 | 99.0 | 96.0 |
| MC3644-1MS | K54966.D | 97.0 | 100.0 | 99.0 |
| MC3644-1MSD | K54967.D | 105.0 | 107.0 | 108.0 |
| MC3751-4MS | V2134.D | 99.0 | 98.0 | 98.0 |
| MC3751-4MSD | V2135.D | 99.0 | 97.0 | 97.0 |
| MSK1836-BS | K54951.D | 105.0 | 110.0 | 104.0 |
| MSKI836-BSD | K54952.D | 100.0 | 104.0 | 100.0 |
| MSK1836-MB | K54953.D | 108.0 | 104.0 | 111.0 |
| MSV93-BS | V2120.D | 100.0 | 99.0 | 99.0 |
| MSV93-MB | V2121.D | 101.0 | 97.0 | 95.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

New England ACCUTEST LABORATORIES

# GC Volatiles

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## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1319-MB | BH24013.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3644-1, MC3644-3, MC3644-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 3.6 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 79% | 36-148% |

# Method Blank Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1321-MB | BH24041A.D1 | | 09/22/11 | WS | n/a | n/a | GBH1321 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3644-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 0.10 | 0.070 | mg/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 92% | 60-126% |

# Blank Spike Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1319-BSP | BH24014.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |



The QC reported here applies to the following samples: Method: SW846 8015

MC3644-1, MC3644-3, MC3644-4

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 16.7 | 84 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 92% | 36-148% |

# Blank Spike Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1321-BSP | BH24042A.D | 1 | 09/22/11 | WS | n/a | n/a | GBH1321 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3644-2

| CAS No. | Compound | Spike mg/l | BSP mg/l | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 0.4 | 0.333 | 83 | 68-134 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 96% | 60-126% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3644-1MS | BH24024.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |
| MC3644-1MSD | BH24025.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |
| MC3644-1 | BH24023.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |



The QC reported here applies to the following samples: Method: SW846 8015

MC3644-1, MC3644-3, MC3644-4

| CAS No. | Compound | MC3644-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 336 | | 50.3 | 459 | 245* [a] | 438 | 203* [a] | 5 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3644-1 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 91% | 88% | 90% | 36-148% |

(a) Outside control limits due to high level in sample relative to spike amount.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3656-2MS | BH24049.D | 1 | 09/22/11 | WS | n/a | n/a | GBH1321 |
| MC3656-2MSD | BH24050.D | 1 | 09/22/11 | WS | n/a | n/a | GBH1321 |
| MC3656-2 | BH24048.D | 1 | 09/22/11 | WS | n/a | n/a | GBH1321 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3644-2

| CAS No. | Compound | MC3656-2 mg/l | Q | Spike mg/l | MS mg/l | MS % | MSD mg/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 0.4 | 0.379 | 95 | 0.336 | 84 | 12 | 72-131/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3656-2 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 93% | 92% | 89% | 60-126% |

# Volatile Surrogate Recovery Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8015 Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3644-2 | BH24051.D | 84.0 |
| GBHI321-BSP | BH24042A.D | 96.0 |
| GBH1321-MB | BH24041A.D | 92.0 |
| MC3656-2MS | BH24049.D | 93.0 |
| MC3656-2MSD | BH24050.D | 92.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 60-126% |

(a) Recovery from GC signal #1

# Volatile Surrogate Recovery Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Method: SW846 8015 | Matrix: SO |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3644-1 | BH24023.D | 90.0 |
| MC3644-3 | BH24026.D | 109.0 |
| MC3644-4 | BH24027.D | 104.0 |
| GBH1319-BSP | BH24014.D | 92.0 |
| GBH1319-MB | BH24013.D | 79.0 |
| MC3644-1MS | BH24024.D | 91.0 |
| MC3644-1MSD | BH24025.D | 88.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1318-CC1043 | Injection Date: | 09/21/11 |
| Lab File ID: | BH24012.D | Injection Time: | 05:03 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBHI319-MB | BH24013.D | 09/21/11 | 09:14 | 32.40 |
| GBH1319-BSP | BH24014.D | 09/21/11 | 09:54 | 32.39 |
| ZZZZZZ | BH24015.D | 09/21/11 | 10:34 | 32.39 |
| ZZZZZZ | BH24016.D | 09/21/11 | 11:14 | 32.40 |
| ZZZZZZ | BH24017.D | 09/21/11 | 11:55 | 32.39 |
| ZZZZZZ | BH24018.D | 09/21/11 | 12:35 | 32.39 |
| ZZZZZZ | BH24019.D | 09/21/11 | 13:15 | 32.39 |
| ZZZZZZ | BH24021.D | 09/21/11 | 14:35 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

6.5.1

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# GC Surrogate Retention Time Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1319-CC1043 | Injection Date: | 09/21/11 |
| Lab File ID: | BH24012A.D | Injection Time: | 05:03 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1319-MB | BH24013.D | 09/21/11 | 09:14 | 32.40 |
| GBH1319-BSP | BH24014.D | 09/21/11 | 09:54 | 32.39 |
| ZZZZZZ | BH24015.D | 09/21/11 | 10:34 | 32.39 |
| ZZZZZZ | BH24016.D | 09/21/11 | 11:14 | 32.40 |
| ZZZZZZ | BH24017.D | 09/21/11 | 11:55 | 32.39 |
| ZZZZZZ | BH24018.D | 09/21/11 | 12:35 | 32.39 |
| ZZZZZZ | BH24019.D | 09/21/11 | 13:15 | 32.39 |
| ZZZZZZ | BH24021.D | 09/21/11 | 14:35 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

6.5.2

6

# GC Surrogate Retention Time Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1319-CC1043 | Injection Date: | 09/21/11 |
| Lab File ID: | BH24022.D | Injection Time: | 15:15 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3644-1 | BH24023.D | 09/21/11 | 15:55 | 32.39 |
| MC3644-1MS | BH24024.D | 09/21/11 | 16:35 | 32.39 |
| MC3644-1MSD | BH24025.D | 09/21/11 | 17:15 | 32.39 |
| MC3644-3 | BH24026.D | 09/21/11 | 17:55 | 32.39 |
| MC3644-4 | BH24027.D | 09/21/11 | 18:36 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1320-CC1043 | Injection Date: | 09/22/11 |
| Lab File ID: | BH24040.D | Injection Time: | 10:09 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1320-MB | BH24041.D | 09/22/11 | 10:49 | 32.39 |
| GBH1321-MB | BH24041A.D | 09/22/11 | 10:49 | 32.39 |
| GBH1320-BSP | BH24042.D | 09/22/11 | 11:29 | 32.39 |
| GBH1321-BSP | BH24042A.D | 09/22/11 | 11:29 | 32.39 |
| ZZZZZZ | BH24043.D | 09/22/11 | 12:09 | 32.40 |
| MC3731-5 | BH24044.D | 09/22/11 | 12:49 | 32.39 |
| MC3731-5MS | BH24045.D | 09/22/11 | 13:29 | 32.39 |
| MC3731-5MSD | BH24046.D | 09/22/11 | 14:09 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1321-CC1043 | Injection Date: | 09/22/11 |
| Lab File ID: | BH24040A.D | Injection Time: | 10:09 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1320-MB | BH24041.D | 09/22/11 | 10:49 | 32.39 |
| GBH1321-MB | BH24041A.D | 09/22/11 | 10:49 | 32.39 |
| GBH1320-BSP | BH24042.D | 09/22/11 | 11:29 | 32.39 |
| GBH1321-BSP | BH24042A.D | 09/22/11 | 11:29 | 32.39 |
| ZZZZZZ | BH24043.D | 09/22/11 | 12:09 | 32.40 |
| MC3731-5 | BH24044.D | 09/22/11 | 12:49 | 32.39 |
| MC3731-5MS | BH24045.D | 09/22/11 | 13:29 | 32.39 |
| MC3731-5MSD | BH24046.D | 09/22/11 | 14:09 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

6.5.5

# GC Surrogate Retention Time Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1320-CC1043 | Injection Date: | 09/22/11 |
| Lab File ID: | BH24047.D | Injection Time: | 14:49 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3656-2 | BH24048.D | 09/22/11 | 15:29 | 32.40 |
| MC3656-2MS | BH24049.D | 09/22/11 | 16:09 | 32.40 |
| MC3656-2MSD | BH24050.D | 09/22/11 | 16:50 | 32.40 |
| MC3644-2 | BH24051.D | 09/22/11 | 17:30 | 32.40 |
| ZZZZZZ | BH24052.D | 09/22/11 | 18:10 | 32.40 |
| ZZZZZZ | BH24053.D | 09/22/11 | 18:50 | 32.40 |
| ZZZZZZ | BH24054.D | 09/22/11 | 19:30 | 32.39 |
| ZZZZZZ | BH24055.D | 09/22/11 | 20:10 | 32.40 |
| ZZZZZZ | BH24056.D | 09/22/11 | 20:51 | 32.40 |
| ZZZZZZ | BH24057.D | 09/22/11 | 21:30 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1321-CC1043 | Injection Date: | 09/22/11 |
| Lab File ID: | BH24047A.D | Injection Time: | 14:49 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3656-2 | BH24048.D | 09/22/11 | 15:29 | 32.40 |
| MC3656-2MS | BH24049.D | 09/22/11 | 16:09 | 32.40 |
| MC3656-2MSD | BH24050.D | 09/22/11 | 16:50 | 32.40 |
| MC3644-2 | BH24051.D | 09/22/11 | 17:30 | 32.40 |
| ZZZZZZ | BH24052.D | 09/22/11 | 18:10 | 32.40 |
| ZZZZZZ | BH24053.D | 09/22/11 | 18:50 | 32.40 |
| ZZZZZZ | BH24054.D | 09/22/11 | 19:30 | 32.39 |
| ZZZZZZ | BH24055.D | 09/22/11 | 20:10 | 32.40 |
| ZZZZZZ | BH24056.D | 09/22/11 | 20:51 | 32.40 |
| ZZZZZZ | BH24057.D | 09/22/11 | 21:30 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

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## GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26286-MB | BG31081.D | 1 | 09/24/11 | KD | 09/17/11 | OP26286 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3644-1, MC3644-3, MC3644-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 16 | 12 | mg/kg | |
| | TPH (>C28-C40) | ND | 16 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 88% | 24-147% |

# Method Blank Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26295-MB | BG31074.D | 1 | 09/24/11 | KD | 09/19/11 | OP26295 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3644-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 0.20 | 0.14 | mg/l | |
| | TPH (>C28-C40) | ND | 0.20 | 0.14 | mg/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 102% | 33-150% |

# Blank Spike Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26286-BS | BG31082.D | 1 | 09/24/11 | KD | 09/17/11 | OP26286 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3644-1, MC3644-3, MC3644-4

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 162 | 102 | 63 | 63-139 |
| | TPH (> C28-C40) | 162 | 94.6 | 59 | 46-103 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 94% | 24-147% |

7.2.1

7

# Blank Spike Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26295-BS | BG31075.D | 1 | 09/24/11 | KD | 09/19/11 | OP26295 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3644-2

| CAS No. | Compound | Spike mg/l | BSP mg/l | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 2.5 | 1.85 | 74 | 46-120 |
| | TPH (>C28-C40) | 2.5 | 1.41 | 56 | 46-120 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 70% | 33-150% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26286-MS | BG31099.D | 1 | 09/25/11 | KD | 09/17/11 | OP26286 | GBG1108 |
| OP26286-MSD | BG31100.D | 1 | 09/25/11 | KD | 09/17/11 | OP26286 | GBG1108 |
| MC3644-1 | BG31101.D | 1 | 09/25/11 | KD | 09/17/11 | OP26286 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3644-1, MC3644-3, MC3644-4

7.3.1

7

| CAS No. | Compound | MC3644-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 460 | | 165 | 943 | 293* [a] | 593 | 78 | 46 | 8-154/127 |
| | TPH (> C28-C40) | 27.2 | | 165 | 142 | 70 | 112 | 50 | 24 | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3644-1 | Limits |
|---|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 76% | 72% | 85% | 24-147% |

(a) Outside control limits due to high level in sample relative to spike amount.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26295-MS | BG31076.D | 1 | 09/24/11 | KD | 09/19/11 | OP26295 | GBG1108 |
| OP26295-MSD | BG31077.D | 1 | 09/24/11 | KD | 09/19/11 | OP26295 | GBG1108 |
| MC3696-1 | BG31078.D | 1 | 09/24/11 | KD | 09/19/11 | OP26295 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3644-2



| CAS No. | Compound | MC3696-1 mg/l | Q | Spike mg/l | MS mg/l | MS % | MSD mg/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 2.5 | 1.96 | 78 | 1.53 | 61 | 25 | 45-120/25 |
| | TPH (>C28-C40) | ND | | 2.5 | 1.51 | 60 | 1.24 | 50 | 20 | 45-120/25 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3696-1 | Limits |
|---|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 76% | 60% | 58% | 33-150% |

# Semivolatile Surrogate Recovery Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Method: SW846-8015 | Matrix: AQ |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3644-2 | BG31080.D | 52.0 |
| OP26295-BS | BG31075.D | 70.0 |
| OP26295-MB | BG31074.D | 102.0 |
| OP26295-MS | BG31076.D | 76.0 |
| OP26295-MSD | BG31077.D | 60.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 1-Chlorooctadecane | 33-150% |

(a) Recovery from GC signal #1

# Semivolatile Surrogate Recovery Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3644-1 | BG3110I.D | 85.0 |
| MC3644-3 | BG31083.D | 71.0 |
| MC3644-4 | BG31085.D | 68.0 |
| OP26286-BS | BG31082.D | 94.0 |
| OP26286-MB | BG31081.D | 88.0 |
| OP26286-MS | BG31099.D | 76.0 |
| OP26286-MSD | BG31100.D | 72.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 1-Chlorooctadecane | 24-147% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/24/11 |
| Lab File ID: | BG31073.D | Injection Time: | 13:10 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26295-MB | BG31074.D | 09/24/11 | 14:04 | 14.97 |
| OP26295-BS | BG31075.D | 09/24/11 | 14:51 | 14.96 |
| OP26295-MS | BG31076.D | 09/24/11 | 15:47 | 14.97 |
| OP26295-MSD | BG31077.D | 09/24/11 | 16:33 | 14.97 |
| MC3696-I | BG31078.D | 09/24/11 | 17:19 | 14.97 |
| ZZZZZZ | BG31079.D | 09/24/11 | 18:05 | 14.97 |
| MC3644-2 | BG31080.D | 09/24/11 | 18:52 | 14.97 |
| OP26286-MB | BG31081.D | 09/24/11 | 19:38 | 14.98 |
| OP26286-BS | BG31082.D | 09/24/11 | 20:24 | 14.98 |
| MC3644-3 | BG31083.D | 09/24/11 | 21:11 | 14.98 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.1

7

# GC Surrogate Retention Time Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/24/11 |
| Lab File ID: | BG31084.D | Injection Time: | 21:57 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3644-4 | BG31085.D | 09/24/11 | 22:43 | 14.98 |
| ZZZZZZ | BG31086.D | 09/24/11 | 23:30 | 14.98 |
| OP26341-MB | BG31087.D | 09/25/11 | 00:16 | 14.97 |
| OP26341-BS | BG31088.D | 09/25/11 | 01:03 | 14.97 |
| ZZZZZZ | BG31089.D | 09/25/11 | 01:49 | 14.97 |
| ZZZZZZ | BG31090.D | 09/25/11 | 02:35 | 14.96 |
| ZZZZZZ | BG31091.D | 09/25/11 | 03:22 | 14.96 |
| ZZZZZZ | BG31092.D | 09/25/11 | 04:08 | 14.97 |
| ZZZZZZ | BG31093.D | 09/25/11 | 04:54 | 14.98 |
| ZZZZZZ | BG31094.D | 09/25/11 | 05:41 | 14.98 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.2

7

# GC Surrogate Retention Time Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/25/11 |
| Lab File ID: | BG31095.D | Injection Time: | 06:27 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31096.D | 09/25/11 | 07:14 | 14.97 |
| ZZZZZZ | BG31097.D | 09/25/11 | 08:00 | 14.98 |
| ZZZZZZ | BG31098.D | 09/25/11 | 08:46 | 14.98 |
| OP26286-MS | BG31099.D | 09/25/11 | 09:32 | 14.99 |
| OP26286-MSD | BG31100.D | 09/25/11 | 10:19 | 14.98 |
| MC3644-1 | BG31101.D | 09/25/11 | 11:05 | 14.98 |
| ZZZZZZ | BG31102.D | 09/25/11 | 11:51 | 14.98 |
| ZZZZZZ | BG31103.D | 09/25/11 | 12:37 | 14.98 |
| OP26341-MS | BG31104.D | 09/25/11 | 13:24 | 14.98 |
| OP26341-MSD | BG31105.D | 09/25/11 | 14:10 | 14.98 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.3

7

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## General Chemistry

# QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC3644
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

**Sample:** MC3644-1 **Analyzed:** 20-SEP-11 by HS **Method:** SM21 2540 B MOD.
**ClientID:** SVE-18 (17.5-20)091511

| | | |
|---|---|---|
| Wet Weight (Total) | 31.694 | g |
| Tare Weight | 24.33 | g |
| Dry Weight (Total) | 31.371 | g |
| Solids, Percent | 95.6 | % |

**Sample:** MC3644-3 **Analyzed:** 20-SEP-11 by HS **Method:** SM21 2540 B MOD.
**ClientID:** SVE-36 (17.5-20)091511

| | | |
|---|---|---|
| Wet Weight (Total) | 27.956 | g |
| Tare Weight | 21.939 | g |
| Dry Weight (Total) | 27.63 | g |
| Solids, Percent | 94.6 | % |

**Sample:** MC3644-4 **Analyzed:** 20-SEP-11 by HS **Method:** SM21 2540 B MOD.
**ClientID:** SVE-19 (15-17.5)091511

| | | |
|---|---|---|
| Wet Weight (Total) | 27.246 | g |
| Tare Weight | 18.757 | g |
| Dry Weight (Total) | 25.935 | g |
| Solids, Percent | 84.6 | % |

# SVE Install 2011 Data Review

**Laboratory SDG: MC3693**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 12/29/2011**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| SVE-8 (9-10) 091611 | SVE-8 (9-10) 091611 DUP |
| TB-091611 | |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

*Yes,* the laboratory case narrative indicated VOC LCS/LCSD recoveries and LCS/LCSD RPDs were outside evaluation criteria. TPH-DRO MS/MSD recoveries were outside of evaluation criteria in sample SVE-8 (9-10) 091611. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated sample containers for field duplicate pair SVE-8 (9-10) 091611/SVE-8 (9-10) 091611 Dup were received by the laboratory labeled correctly, however the COC was missing the Dup indicator. Samples were reported using correct ID; therefore, no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSK1836-BS/BSD | VOCs | Dichlorodifluoromethane | 70/**64** | 8 | 70-130/25 |
| MSM1405-BS/BSD | VOCs | Acrolein | 102/70 | **36** | 70-130/25 |
| MSM1405-BS/BSD | VOCs | Acrylonirile | **400/352** | 13 | 70-130/25 |
| MSM1405-BS/BSD | VOCs | 2-Chloroethyl vinyl ether | **52/59** | 11 | 70-130/25 |
| MSM1405-BS/BSD | VOCs | Chloromethane | **68/60** | 12 | 70-130/25 |
| MSM1405-BS/BSD | VOCs | 1,4-Dioxane | **66**/76 | 14 | 70-130/25 |
| MSM1405-BS/BSD | VOCs | Hexachlorobutadiene | **157/150** | 5 | 70-130/25 |
| MSM1405-BS/BSD | VOCs | Tetrachloroethene | **136/133** | 3 | 70-130/25 |
| MSM1405-BS/BSD | VOCs | Vinyl acetate | **54/55** | 2 | 70-130/25 |
| MSM1405-BS/BSD | VOCs | Vinyl chloride | **69/61** | 12 | 70-130/25 |

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS/LCSD MSM1405-BS/BSD was associated with trip blank sample TB091611. Trip blank samples are quality control samples and are not qualified. LCS samples are not qualified based on RPD alone and LCS recoveries were within acceptance criteria, therefore, did not require qualification.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| SVE-8 (9-10) 091611 | VOCs | Dichlorodifluoromethane | **UJ** |
| SVE-8 (9-10) 091611 DUP | VOCs | Dichlorodifluoromethane | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, sample SVE-8 (9-10) 091611 was spiked and analyzed for TPH-DRO/ORO.

*Were MS/MSD recoveries within evaluation criteria?*

No

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/RPD Criteria |
|---|---|---|---|---|---|
| SVE-8 (9-10) 091611 | TPH-DRO/ORO | TPH-DRO | **0/0** | 0 | 8-154/127 |

USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone and LCS recoveries were within evaluation criteria. No further qualification of the data was required.

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

Yes

| Field ID | Field Duplicate ID |
|---|---|
| SVE-8 (9-10) 091611 | SVE-8 (9-10) 091611 DUP |

*Were field duplicates within evaluation criteria?*

Yes

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

No

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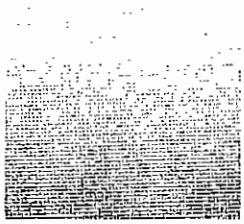
11/23/11





## Technical Report for

## Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC3693

Sampling Date: 09/16/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **68**

Reviewed 12/29/2011

Reza Tand
Lab Director

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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Test resnlts relate only to samples analyzed.



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1

# Sample Summary

Shell Oil

Job No: MC3693

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|
| MC3693-1 | 09/16/11 | 14:30 | 09/17/11 | SO | Soil | SVE-8 (9-10)091611 |
| MC3693-2 | 09/16/11 | 14:30 | 09/17/11 | SO | Soil | SVE-8 (9-10)091611 DUP |
| MC3693-3 | 09/16/11 | 00:00 | 09/17/11 | AQ | Trip Blank Water | TB-091611 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC3693 |
| **Site:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Ra | **Report Date** | 10/4/2011 10:16:10 AM |

2 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were collected on 09/16/2011 and were received at Aceutest on 09/17/2011 properly preserved, at 2.2 Deg. C and intaet. These Samples reeeived an Aeeutest job number of MC3693. A listing of the Laboratory Sample ID, Client Sample ID and dates of colleetion are presented in the Results Summary Seetion of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSM1405

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3684-2MS, MC3684-2MSD were used as the QC samples indicated.
- Blank Spike Rccovery(s) for 1,4-Dioxane, 2-Chloroethyl vinyl ether, Chloromethane, Hexachlorobutadiene, Tetrachloroethene, Vinyl Acetate, Vinyl ehloride are outside eontrol limits. Blank Spike meets program teehnical requirements.
- Matrix Spike Recovery(s) for 2-Chloroethyl vinyl ether, Chloromethanc, Dibromoehloromethane, Hexaehlorobutadiene, m,p-Xylene, o-Xylene, Tetrachloroethenc, Vinyl Acetate, Vinyl chloride, Xylene (total) arc outside control limits. Outside eontrol limits due to possible matrix interferenee. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,4-Dioxane, 2-Chlorocthyl vinyl ethcr, Acetone, Hexaehlorobutadiene, Tetrachloroethene, Vinyl Acetate, Vinyl chloride are outside control limits. Outside control limits due to possible matrix interfcrence. Rcfer to Blank Spike.
- MSM1405-BS/BSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.
- RPD for MSM1405-BSD for Acrolein: Outside eontrol limits. Blank Spike meets program technical requirements.
- MC3684-2MS/2MSD for Acrolein, Acrylonitrilc: Outside control limits. Associatcd samples are non-dctect for this compound.
- Blank Spike Duplicate Recovery(s) for 2-Chloroethyl vinyl ether, Chloromethane, Hexachlorobutadiene, Tetrachloroethene, Vinyl Acetate, Vinyl chloride are outside control limits. Blank Spike mcets program technical requirements.
- Calibration standard MSM1406 is not associated with this job.

**Matrix** SO **Batch ID:** MSK1836

- All samplcs were analyzed within the recommendcd mcthod holding timc.
- All method blanks for this batch mcet method specific criteria.
- Sample(s) MC3644-1MS, MC3644-1MSD were used as the QC samples indicatcd.
- Matrix Spike Recovery(s) for Chloromethanc, Dichlorodifluoromethane, Vinyl Acetatc arc outside control limits. Outside control limits due to possible matrix interfcrenee. Rcfer to Blank Spike.
- Matrix Spikc Duplicate Recovcry(s) for Dichlorodifluoromcthane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spikc.
- MSK1836-BSD for Dichlorodifluoromcthane: Outside control limits. Blank Spikc meets program tcehnical requirements.

## Volatiles by GC By Method SW846 8015

| Matrix SO | Batch ID: GBH1319 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3644-1MS, MC3644-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MS/MSD Recovery(s) for TPH-GRO (VOA) are outside control limits. Outside control limits due to high level in sample relative to spike amount.

## Extractables by GC By Method SW846-8015

| Matrix SO | Batch ID: OP26341 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3693-1MS, MC3693-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method speeific criteria.
- MS/MSD Recovery(s) for TPH (C10-C28) are outside control limits. Outside control limits due to high level in sample relative to spike amount.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN36185 |
|---|---|

- Sample(s) MC3644-1DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC3693).

New England ACCUTEST LABORATORIES

## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-8 (9-10)091611 | | |
| Lab Sample ID: | MC3693-1 | Date Sampled: | 09/16/11 |
| Matrix: | SO - Soil | Date Received: | 09/17/11 |
| Method: | SW846 8260B | Percent Solids: | 91.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K54969.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.02 g | 10.0 ml | 50.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 1400 | 330 | ug/kg | |
| 107-02-8 | Acrolein | ND | 7000 | 4800 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 1400 | 560 | ug/kg | |
| 71-43-2 | Benzene | ND | 140 | 35 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 1400 | 54 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 1400 | 290 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 560 | 59 | ug/kg | |
| 75-25-2 | Bromoform | ND | 560 | 130 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 560 | 190 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 1400 | 330 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 6370 | 1400 | 360 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 2730 | 1400 | 47 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 1400 | 180 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 1400 | 270 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 560 | 63 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 560 | 26 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 1400 | 73 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 1400 | 1400 | ug/kg | |
| 67-66-3 | Chloroform | ND | 560 | 42 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 1400 | 61 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 1400 | 39 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 1400 | 320 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1400 | 1400 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 560 | 180 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 560 | 54 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 560 | 42 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 560 | 41 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 560 | 39 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 560 | 96 | ug/kg | UJ |
| 75-34-3 | 1,1-Dichloroethane | ND | 560 | 43 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 560 | 41 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 560 | 89 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-8 (9-10)091611 | | |
| Lab Sample ID: | MC3693-1 | Date Sampled: | 09/16/11 |
| Matrix: | SO - Soil | Date Received: | 09/17/11 |
| Method: | SW846 8260B | Percent Solids: | 91.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 560 | 76 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 560 | 71 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 560 | 64 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 1400 | 330 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 1400 | 52 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 1400 | 54 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 560 | 280 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 560 | 190 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 7000 | 7000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 1400 | 880 | ug/kg | |
| 100-41-4 | Ethylbenzene | 609 | 560 | 37 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 1400 | 1400 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 1400 | 300 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 7160 | 1400 | 45 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | 1030 | 1400 | 46 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 560 | 170 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 1400 | 240 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 1400 | 86 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 560 | 100 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 1400 | 1400 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 10800 | 1400 | 45 | ug/kg | |
| 100-42-5 | Styrene | ND | 1400 | 140 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1400 | 280 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 560 | 50 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 560 | 47 | ug/kg | |
| 108-88-3 | Toluene | ND | 1400 | 50 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1400 | 310 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1400 | 1400 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 560 | 52 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 560 | 72 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 560 | 55 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 560 | 260 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1400 | 59 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 768 | 1400 | 44 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 479 | 1400 | 51 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 1400 | 330 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 560 | 180 | ug/kg | |
| | m,p-Xylene | ND | 560 | 71 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 560 | 52 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 560 | 35 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-8 (9-10)091611 | | |
| Lab Sample ID: | MC3693-1 | Date Sampled: | 09/16/11 |
| Matrix: | SO - Soil | Date Received: | 09/17/11 |
| Method: | SW846 8260B | Percent Solids: | 91.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 107% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 103% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 121% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-8 (9-10)091611 | | |
| Lab Sample ID: | MC3693-1 | Date Sampled: | 09/16/11 |
| Matrix: | SO - Soil | Date Received: | 09/17/11 |
| Method: | SW846 8015 | Percent Solids: | 91.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24035.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.96 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 1090 | 14 | 10 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 103% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-8 (9-10)091611 | | |
| Lab Sample ID: | MC3693-1 | Date Sampled: | 09/16/11 |
| Matrix: | SO - Soil | Date Received: | 09/17/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 91.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31107.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.2 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 1030 | 18 | 14 | mg/kg | |
| | TPH (> C28-C40) | ND | 18 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 32% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.2

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-8 (9-10)091611 DUP | | |
| Lab Sample ID: | MC3693-2 | Date Sampled: | 09/16/11 |
| Matrix: | SO - Soil | Date Received: | 09/17/11 |
| Method: | SW846 8260B | Percent Solids: | 90.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K54970.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.80 g | 10.0 ml | 50.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 1500 | 350 | ug/kg | |
| 107-02-8 | Acrolein | ND | 7500 | 5100 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 1500 | 600 | ug/kg | |
| 71-43-2 | Benzene | ND | 150 | 37 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 1500 | 57 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 1500 | 310 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 600 | 63 | ug/kg | |
| 75-25-2 | Bromoform | ND | 600 | 140 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 600 | 200 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 1500 | 360 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 7360 | 1500 | 380 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 3170 | 1500 | 50 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 1500 | 200 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 1500 | 290 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 600 | 67 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 600 | 28 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 1500 | 78 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 1500 | 1500 | ug/kg | |
| 67-66-3 | Chloroform | ND | 600 | 44 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 1500 | 65 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 1500 | 42 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 1500 | 340 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1500 | 1500 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 600 | 190 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 600 | 57 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 600 | 45 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 600 | 43 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 600 | 42 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 600 | 100 | ug/kg | UJ |
| 75-34-3 | 1,1-Dichloroethane | ND | 600 | 46 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 600 | 43 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 600 | 95 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-8 (9-10)091611 DUP | | |
| Lab Sample ID: | MC3693-2 | Date Sampled: | 09/16/11 |
| Matrix: | SO - Soil | Date Received: | 09/17/11 |
| Method: | SW846 8260B | Percent Solids: | 90.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 600 | 81 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 600 | 76 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 600 | 68 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 1500 | 350 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 1500 | 55 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 1500 | 58 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 600 | 300 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 600 | 210 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 7500 | 7500 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 1500 | 930 | ug/kg | |
| 100-41-4 | Ethylbenzene | 608 | 600 | 39 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 1500 | 1500 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 1500 | 310 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 7810 | 1500 | 48 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | 1250 | 1500 | 49 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 600 | 190 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 1500 | 250 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 1500 | 92 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 600 | 110 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 1500 | 1500 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 12100 | 1500 | 48 | ug/kg | |
| 100-42-5 | Styrene | ND | 1500 | 150 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1500 | 300 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 600 | 53 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 600 | 50 | ug/kg | |
| 108-88-3 | Toluene | ND | 1500 | 54 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1500 | 330 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1500 | 1500 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 600 | 55 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 600 | 76 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 600 | 59 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 600 | 280 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1500 | 63 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 925 | 1500 | 47 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 587 | 1500 | 54 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 1500 | 350 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 600 | 190 | ug/kg | |
| | m,p-Xylene | ND | 600 | 75 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 600 | 55 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 600 | 38 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-8 (9-10)091611 DUP | | |
| Lab Sample ID: | MC3693-2 | Date Sampled: | 09/16/11 |
| Matrix: | SO - Soil | Date Received: | 09/17/11 |
| Method: | SW846 8260B | Percent Solids: | 90.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 | 170 East Rand Ave. Hartford, IL | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 105% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 123% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-8 (9-10)091611 DUP | | |
| Lab Sample ID: | MC3693-2 | Date Sampled: | 09/16/11 |
| Matrix: | SO - Soil | Date Received: | 09/17/11 |
| Method: | SW846 8015 | Percent Solids: | 90.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24036.D | 1 | 09/22/11 | WS | n/a | n/a | GBH1319 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.16 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 918 | 14 | 10 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 106% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-8 (9-10)091611 DUP | | |
| Lab Sample ID: | MC3693-2 | Date Sampled: | 09/16/11 |
| Matrix: | SO - Soil | Date Received: | 09/17/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 90.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31108.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.4 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 1030 | 18 | 14 | mg/kg | |
| | TPH ( > C28-C40) | ND | 18 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 32% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB-091611 | | |
| Lab Sample ID: | MC3693-3 | Date Sampled: | 09/16/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/17/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M43637.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | TB-091611 | | |
| Lab Sample ID: | MC3693-3 | Date Sampled: | 09/16/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/17/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB-091611 | | |
| Lab Sample ID: | MC3693-3 | Date Sampled: | 09/16/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/17/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 | 170 East Rand Ave. Hartford, IL | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 91% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 94% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 89% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES



## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

# Shell Oil Products Chain Of Custody Record

URS

LAB (LOCATION)
- ☐ XENCO ( )
- ☑ CALSCIENCE ( )
- ☑ OTHER ( Accutest Labs; 495 Technology Ctr W ) ☐ Lab Vendor # ( )
- ☐ SPL ( )

Lab Vendor #

Please Check Appropriate Box: ☑ ENV. SERVICES ☐ MOTIVA RETAIL ☐ SHELL RET. ☐ MOTIVA SD&CM ☐ CONSULTANT ☐ LUBES ☐ SHELL PIPELINE ☐ OTHER

Print Bill To Contact Name: Jeff Adams

PO #

INCIDENT # (ENV SERVICES): 9 7 2 1 6 6 4 0

SAP #: 3 4 0 0 6 1

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 9/16/11

PAGE: 1 of 1

MAIL/PAY COMPANY: URS CORPORATION

LOC CODE:

SITE ADDRESS: Street and City: 170 EAST RAND AVENUE -- HARTFORD

State: IL

GLOBAL ID NO:

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110

EDF DELIVERABLE TO (Name, Company, Office Location):

PHONE NO:

E-MAIL:

CONSULTANT PROJECT NO: Roxana SVE Install 2011 / 21562593.00014

PROJECT CONTACT (Purchase or PDF Report to): Elizabeth Kunkel

TELEPHONE: 314-743-4170

FAX: 314-429-0462

BR To Contact E-MAIL: elizabeth_kunkel@urscorp.com

SAMPLER NAME(S) (PRINT):

LAB USE ONLY: MC 3693

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY:

DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C°: Cooler #1 | Cooler #2 | Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
- * Please include "J" values on Reports.
- * Please provide sample receipt upon login.

☑ SHELL CONTRACT RATE APPLIES
☐ STATE REIMBURSEMENT RATE APPLIES
☐ EDD NOT NEEDED
☑ RECEIPT VERIFICATION REQUESTED
☐ PROVIDE LEDD DISK

REQUESTED ANALYSIS

FIELD NOTES:

TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | HCL | HNO3 | H2SO4 | CH3OH | NaHSO4 | NONE | OTHER | # of Cont | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SVE-8(9-10)091611 | 09/16/11 | 1430 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 2 | SVE-8(9-10)091611 | 09/16/11 | 1430 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 3 | TB-091611 | 09/16/11 | | Water | 2 | | | | | | | 2 | X | | | |
| | | | | | | | | | | | | | | | | NA, DH3,506 |

| Relinquished by (Signature) | Received by (Signature) | Date | Time |
|---|---|---|---|
| [signature] | Fedex | 9/16/11 | 1730 |
| Fedex | [signature] | 9/17/11 | 1915 |
| | | | |

05/2008 Revision 2.2°c

MC3693: Chain of Custody
Page 1 of 3

ACCUTEST LABORATORIES

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC3693 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 9/17/2011 Delivery Method: FedEx

Project: 170 EAST RAND AVE,IL No. Coolers: 1 Airbill #'s: N/A

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2. Custody Seals Intact: | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification: | Infared gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservation | Y | N | N/A |
|---|---|---|---|
| 1. Trip Blank present / cooler: | ☐ | ☐ | |
| 2. Trip Blank listed on COC: | ☐ | ☐ | |
| 3. Samples preserved properly: | ☑ | ☐ | |
| 4. VOCs headspace free: | ☐ | ☐ | ☑ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles: | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree: | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1. Sample rec'd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3. Condition of sample: | Intact |

| Sample Integrity - Instructions | Y | N | N/A |
|---|---|---|---|
| 1. Analysis requested is clear: | ☑ | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | ☑ | |
| 3. Sufficient volume rec'd for analysis: | ☑ | ☐ | |
| 4. Compositing instructions clear: | ☐ | ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ | ☐ | ☑ |

Comments

Received on coc sample #1 and #2 identical ID "SVE-8(9-10)091611, 9/16/11,time.14:30, Soil" but sample# 2 bottles have "Dup" at end of ID.

Accutest Laboratories
V.508.481.6200

495 Technology Center West, Bldg One
F 508 481 7753

Marlborough, MA
www/accutest.com

4.1
4

**MC3693: Chain of Custody**
**Page 2 of 3**

ACCUTEST

## Sample Receipt Summary - Problem Resolution

**Accutest Job Number:** MC3693

**CSR:** Jeremy Vienneau **Response Date** 9/19/2011

**Response:** Client advised Accutest that "Dup" should be included on the report for sample -2. See email in file.



Accutest Laboratories
V 508 481.6200

495 Technology Center West, Bldg One
F. 508 481 7753

Marlborough, MA
www/accutest.com

**MC3693: Chain of Custody**
**Page 3 of 3**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3693

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3693-1 | Collected: 16-SEP-11 14:30 By: | | Received: 17-SEP-11 By: | | | |
| SVE-8 (9-10)091611 | | | | | | |
| MC3693-1 | SM21 2540 B MOD. | 20-SEP-11 | HS | | | %SOL |
| MC3693-1 | SW846 8015 | 21-SEP-11 23:56 | WS | | | V8015GRO |
| MC3693-1 | SW846 8260B | 22-SEP-11 18:16 | GK | | | V8260SL |
| MC3693-1 | SW846-8015 | 25-SEP-11 15:42 | KD | 22-SEP-11 | AF | B8015DROORO |
| MC3693-2 | Collected: 16-SEP-11 14:30 By: | | Received: 17-SEP-11 By: | | | |
| SVE-8 (9-10)091611 DUP | | | | | | |
| MC3693-2 | SM21 2540 B MOD. | 20-SEP-11 | HS | | | %SOL |
| MC3693-2 | SW846 8015 | 22-SEP-11 00:35 | WS | | | V8015GRO |
| MC3693-2 | SW846 8260B | 22-SEP-11 18:43 | GK | | | V8260SL |
| MC3693-2 | SW846-8015 | 25-SEP-11 16:28 | KD | 22-SEP-11 | AF | B8015DROORO |
| MC3693-3 | Collected: 16-SEP-11 00:00 By: | | Received: 17-SEP-11 By: | | | |
| TB-091611 | | | | | | |
| MC3693-3 | SW846 8260B | 28-SEP-11 17:05 | TD | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/17/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3693-1.1 | Walk In Ref #9 | Hamid Siamak | 09/20/11 10:26 | Retrieve from Storage |
| MC3693-1.1 | Hamid Siamak | Walk In Ref #9 | 09/20/11 12:51 | Return to Storage |
| MC3693-1.1 | Walk In Ref #9 | Bijan Jafari | 09/22/11 16:34 | Retrieve from Storage |
| MC3693-1.1 | Bijan Jafari | Walk In Ref #9 | 09/22/11 16:37 | Return to Storage |
| MC3693-1.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3693-1.5 | VOC Ref #10 | William Shao | 09/21/11 09:00 | Retrieve from Storage |
| MC3693-1.5 | William Shao | GCBH | 09/21/11 09:00 | Load on Instrument |
| MC3693-1.5 | GCBH | William Shao | 09/21/11 09:00 | Unload from Instrument |
| MC3693-1.5 | William Shao | VOC Ref #10 | 09/21/11 09:00 | Return to Storage |
| MC3693-1.5 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3693-1.6 | VOC Ref #10 | Gary Krasinski | 09/21/11 14:42 | Retrieve from Storage |
| MC3693-1.6 | Gary Krasinski | VOC Ref #10 | 09/23/11 09:21 | Return to Storage |
| MC3693-1.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3693-2.1 | Walk In Ref #9 | Hamid Siamak | 09/20/11 10:26 | Retrieve from Storage |
| MC3693-2.1 | Hamid Siamak | Walk In Ref #9 | 09/20/11 12:51 | Return to Storage |
| MC3693-2.1 | Walk In Ref #9 | Bijan Jafari | 09/22/11 16:34 | Retrieve from Storage |
| MC3693-2.1 | Bijan Jafari | Walk In Ref #9 | 09/22/11 16:37 | Return to Storage |
| MC3693-2.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3693-2.5 | VOC Ref #10 | William Shao | 09/21/11 09:00 | Retrieve from Storage |
| MC3693-2.5 | William Shao | GCBH | 09/21/11 09:00 | Load on Instrument |
| MC3693-2.5 | GCBH | William Shao | 09/21/11 09:00 | Unload from Instrument |
| MC3693-2.5 | William Shao | VOC Ref #10 | 09/21/11 09:00 | Return to Storage |
| MC3693-2.5 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3693-2.6 | VOC Ref #10 | Gary Krasinski | 09/21/11 14:42 | Retrieve from Storage |
| MC3693-2.6 | Gary Krasinski | VOC Ref #10 | 09/23/11 09:21 | Return to Storage |
| MC3693-2.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3693-3.1 | VOC Ref #5 | Jugal Patel | 09/28/11 11:18 | Retrieve from Storage |
| MC3693-3.1 | Jugal Patel | GCMSM | 09/28/11 11:19 | Load on Instrument |
| MC3693-3.I | GCMSM | Jugal Patel | 09/30/11 11:12 | Unload from Instrument |
| MC3693-3.1 | Jugal Patel | VOC Ref #5 | 09/30/11 11:12 | Return to Storage |
| MC3693-3.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |

New England ACCUTEST LABORATORIES



## GC/MS Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1836-MB | K54953.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3693-1, MC3693-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 58 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 850 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 250 | 100 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 6.3 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 9.5 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 52 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 10 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 24 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 34 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 59 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 63 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 8.3 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 33 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 48 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 11 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 4.7 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 13 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 250 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 7.4 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 11 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 7.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 56 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 250 | 250 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 33 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 100 | 9.6 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 7.5 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 7.2 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 7.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 17 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 7.6 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 7.3 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 16 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 13 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 11 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 58 | ug/kg | |

# Method Blank Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1836-MB | K54953.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3693-1, MC3693-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 9.2 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 9.6 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 50 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 34 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 160 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 6.5 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 250 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 52 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 7.9 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.1 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 31 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 42 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 15 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 18 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 250 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 8.1 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 25 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 8.8 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 8.4 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 9.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 55 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 250 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 9.2 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 13 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 9.8 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 46 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 10 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 7.9 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 9.1 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 59 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 32 | ug/kg | |
| | m,p-Xylene | ND | 100 | 13 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 9.2 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 6.3 | ug/kg | |

# Method Blank Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1836-MB | K54953.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3693-1, MC3693-2

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 108% | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 111% | 70-130% |

# Method Blank Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1405-MB | M43627.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3693-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |

# Method Blank Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1405-MB | M43627.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3693-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

# Method Blank Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1405-MB | M43627.D | 1 | 09/28/11 | TD | n/a | n/a | MSMI405 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3693-3

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 84% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 92% | 70-130% |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1836-BS | K54951.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| MSK1836-BSD | K54952.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3693-1, MC3693-2

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 2280 | 91 | 2320 | 93 | 2 | 70-130/25 |
| 107-02-8 | Acrolein | 12500 | 10300 | 82 | 10400 | 83 | 1 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 2500 | 2480 | 99 | 2420 | 97 | 2 | 70-130/25 |
| 71-43-2 | Benzene | 2500 | 2480 | 99 | 2350 | 94 | 5 | 70-130/25 |
| 108-86-1 | Bromobenzene | 2500 | 2580 | 103 | 2440 | 98 | 6 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 2500 | 2460 | 98 | 2390 | 96 | 3 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 2500 | 2610 | 104 | 2500 | 100 | 4 | 70-130/25 |
| 75-25-2 | Bromoform | 2500 | 2740 | 110 | 2700 | 108 | 1 | 70-130/25 |
| 74-83-9 | Bromomethane | 2500 | 2160 | 86 | 2080 | 83 | 4 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 2500 | 100 | 2550 | 102 | 2 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 2500 | 2710 | 108 | 2570 | 103 | 5 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2660 | 106 | 2510 | 100 | 6 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2580 | 103 | 2420 | 97 | 6 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 2500 | 2300 | 92 | 2140 | 86 | 7 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2520 | 101 | 2360 | 94 | 7 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 2500 | 2680 | 107 | 2570 | 103 | 4 | 70-130/25 |
| 75-00-3 | Chloroethane | 2500 | 2340 | 94 | 2190 | 88 | 7 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 2220 | 89 | 2160 | 86 | 3 | 10-160/25 |
| 67-66-3 | Chloroform | 2500 | 2480 | 99 | 2370 | 95 | 5 | 70-130/25 |
| 74-87-3 | Chloromethane | 2500 | 1820 | 73 | 1770 | 71 | 3 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2490 | 100 | 2360 | 94 | 5 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2610 | 104 | 2460 | 98 | 6 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 2500 | 2320 | 93 | 2220 | 89 | 4 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 2500 | 2790 | 112 | 2700 | 108 | 3 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 2500 | 2640 | 106 | 2610 | 104 | 1 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2660 | 106 | 2540 | 102 | 5 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2630 | 105 | 2510 | 100 | 5 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2620 | 105 | 2510 | 100 | 4 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 1740 | 70 | 1610 | 64* [a] | 8 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2440 | 98 | 2340 | 94 | 4 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2390 | 96 | 2340 | 94 | 2 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2450 | 98 | 2330 | 93 | 5 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2430 | 97 | 2300 | 92 | 5 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2490 | 100 | 2330 | 93 | 7 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2490 | 100 | 2390 | 96 | 4 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2560 | 102 | 2500 | 100 | 2 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1836-BS | K54951.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| MSK1836-BSD | K54952.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3693-1, MC3693-2

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2790 | 112 | 2620 | 105 | 6 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2530 | 101 | 2370 | 95 | 7 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2580 | 103 | 2520 | 101 | 2 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2810 | 112 | 2710 | 108 | 4 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 12500 | 12200 | 98 | 12100 | 97 | 1 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2610 | 104 | 2540 | 102 | 3 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 2500 | 2710 | 108 | 2580 | 103 | 5 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2680 | 107 | 2510 | 100 | 7 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 2500 | 2700 | 108 | 2650 | 106 | 2 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 2500 | 3010 | 120 | 2830 | 113 | 6 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2730 | 109 | 2550 | 102 | 7 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2400 | 96 | 2370 | 95 | 1 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 2600 | 104 | 2540 | 102 | 2 | 70-130/25 |
| 74-95-3 | Methylene bromide | 2500 | 2470 | 99 | 2430 | 97 | 2 | 70-130/25 |
| 75-09-2 | Methylene chloride | 2500 | 2540 | 102 | 2380 | 95 | 7 | 70-130/25 |
| 91-20-3 | Naphthalene | 2500 | 2470 | 99 | 2370 | 95 | 4 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 2500 | 2600 | 104 | 2470 | 99 | 5 | 70-130/25 |
| 100-42-5 | Styrene | 2500 | 2780 | 111 | 2700 | 108 | 3 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2710 | 108 | 2640 | 106 | 3 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2590 | 104 | 2560 | 102 | 1 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 2500 | 2720 | 109 | 2540 | 102 | 7 | 70-130/25 |
| 108-88-3 | Toluene | 2500 | 2570 | 103 | 2420 | 97 | 6 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 2430 | 97 | 2290 | 92 | 6 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2570 | 103 | 2450 | 98 | 5 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2520 | 101 | 2380 | 95 | 6 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2600 | 104 | 2540 | 102 | 2 | 70-130/25 |
| 79-01-6 | Trichloroethene | 2500 | 2540 | 102 | 2390 | 96 | 6 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2290 | 92 | 2160 | 86 | 6 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2540 | 102 | 2490 | 100 | 2 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2560 | 102 | 2410 | 96 | 6 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2540 | 102 | 2420 | 97 | 5 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 2500 | 1840 | 74 | 1810 | 72 | 2 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 2500 | 1810 | 72 | 1740 | 70 | 4 | 70-130/25 |
| | m,p-Xylene | 5000 | 5500 | 110 | 5260 | 105 | 4 | 70-130/25 |
| 95-47-6 | o-Xylene | 2500 | 2700 | 108 | 2590 | 104 | 4 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 7500 | 8210 | 109 | 7850 | 105 | 4 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1836-BS | K54951.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| MSK1836-BSD | K54952.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3693-1, MC3693-2

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 105% | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 110% | 104% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 104% | 100% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1405-BS | M43624.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| MSM1405-BSD | M43625.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3693-3

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 54.4 | 109 | 47.0 | 94 | 15 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 254 | 102 | 176 | 70 | 36* a | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 200 | 400* b | 176 | 352* b | 13 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 51.8 | 104 | 48.7 | 97 | 6 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 57.7 | 115 | 56.0 | 112 | 3 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 53.1 | 106 | 51.1 | 102 | 4 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 57.9 | 116 | 57.4 | 115 | 1 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 54.8 | 110 | 53.7 | 107 | 2 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 45.2 | 90 | 37.7 | 75 | 18 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 53.3 | 107 | 51.3 | 103 | 4 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 59.4 | 119 | 56.5 | 113 | 5 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 58.7 | 117 | 58.1 | 116 | 1 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 57.0 | 114 | 55.3 | 111 | 3 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 45.3 | 91 | 38.1 | 76 | 17 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 63.3 | 127 | 58.9 | 118 | 7 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 57.7 | 115 | 56.2 | 112 | 3 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 43.5 | 87 | 36.0 | 72 | 19 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 26.2 | 52* a | 29.3 | 59* a | 11 | 70-130/25 |
| 67-66-3 | Chloroform | 50 | 51.2 | 102 | 49.3 | 99 | 4 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 33.9 | 68* a | 30.2 | 60* a | 12 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 53.1 | 106 | 52.5 | 105 | 1 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 55.7 | 111 | 53.1 | 106 | 5 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 45.5 | 91 | 47.7 | 95 | 5 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 61.0 | 122 | 62.1 | 124 | 2 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 57.4 | 115 | 56.1 | 112 | 2 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 57.2 | 114 | 55.9 | 112 | 2 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 58.2 | 116 | 56.0 | 112 | 4 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 56.1 | 112 | 54.6 | 109 | 3 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 48.9 | 98 | 45.6 | 91 | 7 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 45.5 | 91 | 44.9 | 90 | 1 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 55.0 | 110 | 53.4 | 107 | 3 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 54.2 | 108 | 45.6 | 91 | 17 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 49.9 | 100 | 48.6 | 97 | 3 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 50.3 | 101 | 48.2 | 96 | 4 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 52.8 | 106 | 50.8 | 102 | 4 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 53.7 | 107 | 52.0 | 104 | 3 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1405-BS | M43624.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| MSM1405-BSD | M43625.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3693-3

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 60.8 | 122 | 55.1 | 110 | 10 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 57.7 | 115 | 54.0 | 108 | 7 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 49.5 | 99 | 52.9 | 106 | 7 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 56.1 | 112 | 55.8 | 112 | 1 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 166 | 66* a | 191 | 76 | 14 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 50.2 | 100 | 49.2 | 98 | 2 | 77-137/25 |
| 100-41-4 | Ethylbenzene | 50 | 57.2 | 114 | 56.8 | 114 | 1 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 78.6 | 157* a | 75.1 | 150* a | 5 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 53.9 | 108 | 52.0 | 104 | 4 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 64.0 | 128 | 63.2 | 126 | 1 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 60.0 | 120 | 59.4 | 119 | 1 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 43.5 | 87 | 42.8 | 86 | 2 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 43.3 | 87 | 47.2 | 94 | 9 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 53.9 | 108 | 54.0 | 108 | 0 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 50.5 | 101 | 43.1 | 86 | 16 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 50.3 | 101 | 51.4 | 103 | 2 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 55.9 | 112 | 54.2 | 108 | 3 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 56.9 | 114 | 54.7 | 109 | 4 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 61.3 | 123 | 61.0 | 122 | 0 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 45.3 | 91 | 47.8 | 96 | 5 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 68.1 | 136* a | 66.4 | 133* a | 3 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 59.5 | 119 | 58.9 | 118 | 1 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 58.9 | 118 | 58.2 | 116 | 1 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 63.7 | 127 | 62.1 | 124 | 3 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 58.0 | 116 | 53.0 | 106 | 9 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 55.6 | 111 | 56.7 | 113 | 2 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 58.0 | 116 | 56.3 | 113 | 3 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 54.4 | 109 | 46.2 | 92 | 16 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 45.1 | 90 | 47.0 | 94 | 4 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 54.2 | 108 | 53.3 | 107 | 2 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 54.1 | 108 | 53.2 | 106 | 2 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 26.9 | 54* a | 27.5 | 55* a | 2 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 34.3 | 69* a | 30.3 | 61* a | 12 | 70-130/25 |
| | m,p-Xylene | 100 | 123 | 123 | 119 | 119 | 3 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 60.3 | 121 | 59.9 | 120 | 1 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 183 | 122 | 179 | 119 | 2 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1405-BS | M43624.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| MSM1405-BSD | M43625.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3693-3

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | 82% | 70-130% |
| 2037-26-5 | Toluene-D8 | 94% | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 94% | 92% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3644-1MS | K54966.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| MC3644-1MSD | K54967.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| MC3644-1 | K54965.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3693-1, MC3693-2

| CAS No. | Compound | MC3644-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 11600 | 12000 | 104 | 12900 | 111 | 7 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 57900 | 48600 | 84 | 53200 | 92 | 9 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 11600 | 11000 | 95 | 11700 | 101 | 6 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 11600 | 11100 | 96 | 11900 | 103 | 7 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 11600 | 11300 | 98 | 12200 | 105 | 8 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 11600 | 11000 | 95 | 12000 | 104 | 9 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 11600 | 11700 | 101 | 12400 | 107 | 6 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 11600 | 12600 | 109 | 13400 | 116 | 6 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 11600 | 9500 | 82 | 10400 | 90 | 9 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 11600 | 12300 | 106 | 12200 | 105 | 1 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | 516 | J | 11600 | 12700 | 105 | 13700 | 114 | 8 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | 196 | J | 11600 | 11900 | 101 | 13000 | 111 | 9 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 11600 | 11300 | 98 | 12400 | 107 | 9 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 11600 | 9640 | 83 | 10600 | 92 | 9 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 11600 | 10900 | 94 | 11700 | 101 | 7 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 11600 | 12000 | 104 | 12900 | 111 | 7 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 11600 | 10000 | 86 | 10900 | 94 | 9 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 11600 | 10200 | 88 | 10900 | 94 | 7 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 11600 | 11100 | 96 | 12000 | 104 | 8 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 11600 | 7880 | 68* [a] | 8530 | 74 | 8 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 11600 | 11000 | 95 | 11900 | 103 | 8 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 11600 | 11400 | 98 | 12300 | 106 | 8 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 11600 | 10300 | 89 | 12200 | 105 | 17 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 11600 | 12500 | 108 | 13300 | 115 | 6 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 11600 | 12000 | 104 | 12700 | 110 | 6 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 11600 | 11700 | 101 | 12700 | 110 | 8 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 11600 | 11600 | 100 | 12500 | 108 | 7 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 11600 | 11700 | 101 | 12600 | 109 | 7 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 11600 | 7210 | 62* [a] | 7880 | 68* [a] | 9 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 11600 | 10800 | 93 | 11800 | 102 | 9 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 11600 | 10800 | 93 | 11400 | 98 | 5 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 11600 | 10700 | 92 | 11700 | 101 | 9 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 11600 | 10600 | 92 | 11500 | 99 | 8 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 11600 | 10700 | 92 | 11800 | 102 | 10 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 11600 | 11100 | 96 | 11800 | 102 | 6 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 11600 | 11500 | 99 | 12100 | 105 | 5 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3644-1MS | K54966.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| MC3644-1MSD | K54967.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| MC3644-1 | K54965.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |

5.3.1

5

The QC reported here applies to the following samples: Method: SW846 8260B

MC3693-1, MC3693-2

| CAS No. | Compound | MC3644-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 11600 | 11900 | 103 | 12900 | 111 | 8 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 11600 | 11200 | 97 | 12000 | 104 | 7 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 11600 | 11400 | 98 | 12200 | 105 | 7 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 11600 | 12200 | 105 | 12900 | 111 | 6 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 57900 | 53600 | 93 | 58600 | 101 | 9 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 11600 | 13200 | 114 | 13600 | 117 | 3 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 1090 | | 11600 | 13200 | 105 | 14100 | 112 | 7 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 11600 | 13200 | 114 | 14100 | 122 | 7 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 11600 | 13400 | 116 | 14200 | 123 | 6 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | 318 | J | 11600 | 13600 | 115 | 14600 | 123 | 7 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | 322 | J | 11600 | 12400 | 104 | 13400 | 113 | 8 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 11600 | 10900 | 94 | 11700 | 101 | 7 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 11600 | 14100 | 122 | 15100 | 130 | 7 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 11600 | 11000 | 95 | 11800 | 102 | 7 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 11600 | 11100 | 96 | 12000 | 104 | 8 | 70-130/30 |
| 91-20-3 | Naphthalene | 3910 | | 11600 | 15900 | 104 | 17300 | 116 | 8 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 383 | J | 11600 | 11900 | 99 | 12800 | 107 | 7 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 11600 | 12600 | 109 | 13500 | 117 | 7 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 11600 | 12200 | 105 | 13000 | 112 | 6 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 11600 | 11800 | 102 | 12600 | 109 | 7 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 11600 | 11900 | 103 | 12800 | 111 | 7 | 70-130/30 |
| 108-88-3 | Toluene | 81.7 | J | 11600 | 11600 | 100 | 12300 | 106 | 6 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 11600 | 11900 | 103 | 13200 | 114 | 10 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 11600 | 12100 | 105 | 12900 | 111 | 6 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 11600 | 11000 | 95 | 12000 | 104 | 9 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 11600 | 11800 | 102 | 12600 | 109 | 7 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 11600 | 11400 | 98 | 12400 | 107 | 8 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 11600 | 9630 | 83 | 10700 | 92 | 11 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 11600 | 11300 | 98 | 12100 | 105 | 7 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1740 | | 11600 | 13000 | 97 | 14000 | 106 | 7 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 370 | J | 11600 | 11500 | 96 | 12600 | 106 | 9 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 11600 | 7920 | 68* [a] | 8070 | 70 | 2 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 11600 | 9960 | 86 | 10900 | 94 | 9 | 70-130/30 |
| | m,p-Xylene | 1910 | | 23200 | 26100 | 104 | 27900 | 112 | 7 | 70-130/30 |
| 95-47-6 | o-Xylene | 197 | J | 11600 | 12100 | 103 | 13100 | 111 | 8 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 2110 | | 34700 | 38300 | 104 | 41000 | 112 | 7 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3644-1MS | K54966.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| MC3644-1MSD | K54967.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |
| MC3644-1 | K54965.D | 1 | 09/22/11 | GK | n/a | n/a | MSK1836 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3693-1, MC3693-2

| CAS No. | Surrogate Recoveries | MS | MSD | MC3644-1 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 97% | 105% | 111% | 70-130% |
| 2037-26-5 | Toluene-D8 | 100% | 107% | 105% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | 108% | 108% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3684-2MS | M43641.D | 5 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| MC3684-2MSD | M43642.D | 5 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| MC3684-2 | M43640.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3693-3

| CAS No. | Compound | MC3684-2 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 250 | 175 | 70 | 169 | 68* [a] | 3 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 1250 | 2080 | 166* [b] | 1950 | 156* [b] | 6 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 250 | 1020 | 408* [b] | 927 | 371* [b] | 10 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 250 | 244 | 98 | 240 | 96 | 2 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 250 | 298 | 119 | 277 | 111 | 7 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 250 | 258 | 103 | 287 | 115 | 11 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 250 | 314 | 126 | 288 | 115 | 9 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 250 | 297 | 119 | 276 | 110 | 7 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 250 | 215 | 86 | 219 | 88 | 2 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 250 | 287 | 115 | 284 | 114 | 1 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 250 | 300 | 120 | 287 | 115 | 4 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 250 | 301 | 120 | 288 | 115 | 4 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 250 | 290 | 116 | 275 | 110 | 5 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 250 | 226 | 90 | 212 | 85 | 6 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 250 | 319 | 128 | 311 | 124 | 3 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 250 | 296 | 118 | 285 | 114 | 4 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 250 | 207 | 83 | 217 | 87 | 5 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 250 | 119 | 48* [a] | 97.3 | 39* [a] | 20 | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 250 | 260 | 104 | 278 | 111 | 7 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 250 | 162 | 65* [a] | 178 | 71 | 9 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 250 | 275 | 110 | 251 | 100 | 9 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 250 | 285 | 114 | 260 | 104 | 9 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 250 | 240 | 96 | 241 | 96 | 0 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 250 | 343 | 137* [a] | 312 | 125 | 9 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 250 | 310 | 124 | 280 | 112 | 10 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 250 | 294 | 118 | 283 | 113 | 4 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 250 | 288 | 115 | 280 | 112 | 3 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 250 | 281 | 112 | 275 | 110 | 2 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 250 | 252 | 101 | 256 | 102 | 2 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 250 | 245 | 98 | 252 | 101 | 3 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 250 | 289 | 116 | 269 | 108 | 7 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 250 | 270 | 108 | 251 | 100 | 7 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 250 | 264 | 106 | 266 | 106 | 1 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 250 | 272 | 109 | 265 | 106 | 3 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 250 | 277 | 111 | 248 | 99 | 11 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 250 | 291 | 116 | 246 | 98 | 17 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3684-2MS | M43641.D | 5 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| MC3684-2MSD | M43642.D | 5 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| MC3684-2 | M43640.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC3693-3

| CAS No. | Compound | MC3684-2 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 250 | 306 | 122 | 317 | 127 | 4 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 250 | 296 | 118 | 265 | 106 | 11 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 250 | 266 | 106 | 247 | 99 | 7 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 250 | 293 | 117 | 264 | 106 | 10 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 1250 | 979 | 78 | 826 | 66* [a] | 17 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 250 | 259 | 104 | 227 | 91 | 13 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 250 | 297 | 119 | 286 | 114 | 4 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 250 | 402 | 161* [a] | 382 | 153* [a] | 5 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 250 | 250 | 100 | 207 | 83 | 19 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 250 | 325 | 130 | 304 | 122 | 7 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 250 | 296 | 118 | 293 | 117 | 1 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 250 | 230 | 92 | 237 | 95 | 3 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 250 | 239 | 96 | 209 | 84 | 13 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 250 | 288 | 115 | 268 | 107 | 7 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 250 | 253 | 101 | 242 | 97 | 4 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 250 | 264 | 106 | 254 | 102 | 4 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 250 | 287 | 115 | 259 | 104 | 10 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 250 | 305 | 122 | 276 | 110 | 10 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 250 | 315 | 126 | 317 | 127 | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 250 | 237 | 95 | 216 | 86 | 9 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | 8.2 | | 250 | 379 | 148* [a] | 350 | 137* [a] | 8 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 250 | 307 | 123 | 285 | 114 | 7 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 250 | 309 | 124 | 293 | 117 | 5 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 250 | 324 | 130 | 309 | 124 | 5 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | 8.5 | | 250 | 313 | 122 | 279 | 108 | 11 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 250 | 293 | 117 | 272 | 109 | 7 | 70-130/30 |
| 79-01-6 | Trichloroethene | 9.0 | | 250 | 318 | 124 | 288 | 112 | 10 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 250 | 279 | 112 | 262 | 105 | 6 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 250 | 237 | 95 | 213 | 85 | 11 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 250 | 272 | 109 | 263 | 105 | 3 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 250 | 275 | 110 | 263 | 105 | 4 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 250 | 148 | 59* [a] | 146 | 58* [a] | 1 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 250 | 162 | 65* [a] | 170 | 68* [a] | 5 | 70-130/30 |
| | m,p-Xylene | ND | | 500 | 659 | 132* [a] | 604 | 121 | 9 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 250 | 328 | 131* [a] | 306 | 122 | 7 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 750 | 987 | 132* [a] | 910 | 121 | 8 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3684-2MS | M43641.D | 5 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| MC3684-2MSD | M43642.D | 5 | 09/28/11 | TD | n/a | n/a | MSM1405 |
| MC3684-2 | M43640.D | 1 | 09/28/11 | TD | n/a | n/a | MSM1405 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3693-3

| CAS No. | Surrogate Recoveries | MS | MSD | MC3684-2 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 87% | 94% | 93% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 96% | 88% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | 89% | 91% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Volatile Internal Standard Area Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSK1836-CC1831 | Injection Date: | 09/22/11 |
| Lab File ID: | K54950.D | Injection Time: | 09:36 |
| Instrument ID: | GCMSK | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 284771 | 8.86 | 374706 | 9.71 | 182009 | 12.97 | 213537 | 15.53 | 86745 | 6.48 |
| Upper Limit [a] | 569542 | 9.36 | 749412 | 10.21 | 364018 | 13.47 | 427074 | 16.03 | 173490 | 6.98 |
| Lower Limit [b] | 142386 | 8.36 | 187353 | 9.21 | 91005 | 12.47 | 106769 | 15.03 | 43373 | 5.98 |

| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| MSK1836-BS | 283257 | 8.87 | 372984 | 9.72 | 182617 | 12.97 | 214503 | 15.53 | 90683 | 6.48 |
| MSK1836-BSD | 287692 | 8.87 | 379674 | 9.72 | 184832 | 12.97 | 219075 | 15.53 | 90750 | 6.48 |
| MSK1836-MB | 297002 | 8.87 | 405632 | 9.72 | 187966 | 12.97 | 210733 | 15.53 | 94608 | 6.48 |
| ZZZZZZ | 298074 | 8.86 | 402529 | 9.71 | 188239 | 12.97 | 217943 | 15.53 | 91243 | 6.50 |
| MC3762-9 | 297606 | 8.87 | 405504 | 9.72 | 187938 | 12.97 | 211272 | 15.53 | 100301 | 6.49 |
| ZZZZZZ | 288885 | 8.87 | 389422 | 9.72 | 184259 | 12.97 | 203313 | 15.53 | 84983 | 6.48 |
| ZZZZZZ | 283951 | 8.86 | 392446 | 9.71 | 182527 | 12.97 | 204635 | 15.53 | 91400 | 6.48 |
| ZZZZZZ | 289532 | 8.87 | 389697 | 9.72 | 184306 | 12.97 | 204396 | 15.53 | 92924 | 6.48 |
| ZZZZZZ | 285633 | 8.87 | 387225 | 9.72 | 180440 | 12.97 | 196408 | 15.53 | 91931 | 6.48 |
| MC3762-9MS | 274699 | 8.86 | 365295 | 9.71 | 180073 | 12.97 | 212416 | 15.53 | 92501 | 6.48 |
| MC3762-9MSD | 279781 | 8.87 | 374315 | 9.71 | 183582 | 12.97 | 214175 | 15.53 | 94459 | 6.48 |
| ZZZZZZ | 289466 | 8.87 | 390395 | 9.72 | 185474 | 12.97 | 204248 | 15.53 | 91809 | 6.48 |
| ZZZZZZ | 286355 | 8.87 | 391024 | 9.72 | 182631 | 12.97 | 201344 | 15.53 | 90817 | 6.48 |
| MC3644-1 | 283138 | 8.87 | 378718 | 9.72 | 178316 | 12.97 | 213222 | 15.53 | 86601 | 6.48 |
| MC3644-1MS | 303383 | 8.87 | 396965 | 9.72 | 195312 | 12.97 | 234199 | 15.53 | 95662 | 6.48 |
| MC3644-1MSD | 288739 | 8.87 | 381618 | 9.72 | 187479 | 12.97 | 222708 | 15.53 | 91508 | 6.48 |
| MC3693-1 | 296694 | 8.87 | 398088 | 9.72 | 172345 | 12.97 | 210295 | 15.53 | 90059 | 6.48 |
| MC3693-2 | 303759 | 8.87 | 409440 | 9.72 | 175827 | 12.97 | 212447 | 15.53 | 94941 | 6.48 |
| ZZZZZZ | 295203 | 8.87 | 392377 | 9.72 | 186411 | 12.98 | 207558 | 15.53 | 92937 | 6.48 |
| ZZZZZZ | 302409 | 8.87 | 416296 | 9.72 | 191707 | 12.97 | 220478 | 15.53 | 102767 | 6.48 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1405-CC1370 | Injection Date: | 09/28/11 |
| Lab File ID: | M43623.D | Injection Time: | 10:10 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 117142 | 9.19 | 169628 | 10.07 | 84135 | 13.34 | 109183 | 15.90 | 31139 | 6.74 |
| Upper Limit [a] | 234284 | 9.69 | 339256 | 10.57 | 168270 | 13.84 | 218366 | 16.40 | 62278 | 7.24 |
| Lower Limit [b] | 58571 | 8.69 | 84814 | 9.57 | 42068 | 12.84 | 54592 | 15.40 | 15570 | 6.24 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1406-BS | 121396 | 9.19 | 177311 | 10.07 | 87375 | 13.34 | 111616 | 15.90 | 30963 | 6.74 |
| MSM1406-BSD | 128351 | 9.19 | 183214 | 10.07 | 91967 | 13.34 | 115048 | 15.90 | 32816 | 6.74 |
| MSM1406-MB | 112986 | 9.19 | 152159 | 10.07 | 78129 | 13.34 | 98774 | 15.90 | 32823 | 6.74 |
| ZZZZZZ | 100827 | 9.19 | 147794 | 10.07 | 70939 | 13.34 | 90360 | 15.90 | 30896 | 6.74 |
| ZZZZZZ | 102959 | 9.19 | 140361 | 10.07 | 68224 | 13.34 | 88197 | 15.90 | 27795 | 6.75 |
| ZZZZZZ | 98502 | 9.19 | 145091 | 10.07 | 69396 | 13.34 | 87564 | 15.90 | 29462 | 6.74 |
| MC3693-3 | 94910 | 9.19 | 140318 | 10.07 | 64733 | 13.34 | 85152 | 15.90 | 26476 | 6.74 |
| ZZZZZZ | 93848 | 9.19 | 137086 | 10.07 | 64587 | 13.34 | 83191 | 15.90 | 28234 | 6.73 |
| ZZZZZZ | 105409 | 9.19 | 156399 | 10.07 | 75124 | 13.34 | 99189 | 15.90 | 27511 | 6.74 |
| MC3684-2 | 101823 | 9.19 | 147487 | 10.07 | 66070 | 13.34 | 89443 | 15.90 | 28556 | 6.73 |
| MC3684-2MS | 107896 | 9.19 | 155115 | 10.07 | 74083 | 13.34 | 101148 | 15.90 | 29093 | 6.74 |
| MC3684-2MSD | 107934 | 9.19 | 152959 | 10.07 | 77216 | 13.34 | 105784 | 15.90 | 28450 | 6.74 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1406-CC1371 | Injection Date: | 09/28/11 |
| Lab File ID: | M43623A.D | Injection Time: | 10:10 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 117142 | 9.19 | 169628 | 10.07 | 84135 | 13.34 | 109183 | 15.90 | 31139 | 6.74 |
| Upper Limit [a] | 234284 | 9.69 | 339256 | 10.57 | 168270 | 13.84 | 218366 | 16.40 | 62278 | 7.24 |
| Lower Limit [b] | 58571 | 8.69 | 84814 | 9.57 | 42068 | 12.84 | 54592 | 15.40 | 15570 | 6.24 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1405-BS | 121396 | 9.19 | 177311 | 10.07 | 87375 | 13.34 | 111616 | 15.90 | 30963 | 6.74 |
| MSM1405-BSD | 128351 | 9.19 | 183214 | 10.07 | 91967 | 13.34 | 115048 | 15.90 | 32816 | 6.74 |
| MSM1405-MB | 112986 | 9.19 | 152159 | 10.07 | 78129 | 13.34 | 98774 | 15.90 | 32823 | 6.74 |
| ZZZZZZ | 113748 | 9.19 | 163771 | 10.07 | 75524 | 13.34 | 95371 | 15.90 | 30553 | 6.75 |
| ZZZZZZ | 110141 | 9.19 | 156522 | 10.07 | 73301 | 13.34 | 95314 | 15.90 | 31873 | 6.74 |
| ZZZZZZ | 104388 | 9.19 | 145045 | 10.07 | 68764 | 13.34 | 88685 | 15.90 | 30095 | 6.73 |
| ZZZZZZ | 98924 | 9.19 | 138242 | 10.07 | 67162 | 13.34 | 86965 | 15.90 | 27486 | 6.74 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Surrogate Recovery Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3693-3 | M43637.D | 91.0 | 94.0 | 89.0 |
| MC3684-2MS | M43641.D | 87.0 | 98.0 | 96.0 |
| MC3684-2MSD | M43642.D | 94.0 | 96.0 | 89.0 |
| MSM1405-BS | M43624.D | 85.0 | 94.0 | 94.0 |
| MSM1405-BSD | M43625.D | 82.0 | 98.0 | 92.0 |
| MSM1405-MB | M43627.D | 84.0 | 97.0 | 92.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3693-1 | K54969.D | 107.0 | 103.0 | 121.0 |
| MC3693-2 | K54970.D | 105.0 | 101.0 | 123.0 |
| MC3644-1MS | K54966.D | 97.0 | 100.0 | 99.0 |
| MC3644-1MSD | K54967.D | 105.0 | 107.0 | 108.0 |
| MSK1836-BS | K54951.D | 105.0 | 110.0 | 104.0 |
| MSK1836-BSD | K54952.D | 100.0 | 104.0 | 100.0 |
| MSK1836-MB | K54953.D | 108.0 | 104.0 | 111.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

New England ACCUTEST LABORATORIES

## GC Volatiles

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## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1319-MB | BH24013.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3693-1, MC3693-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 3.6 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 79% | 36-148% |

# Blank Spike Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1319-BSP | BH24014.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3693-1, MC3693-2

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 16.7 | 84 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 92% | 36-148% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3644-1MS | BH24024.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |
| MC3644-1MSD | BH24025.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |
| MC3644-1 | BH24023.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |



The QC reported here applies to the following samples: Method: SW846 8015

MC3693-1, MC3693-2

| CAS No. | Compound | MC3644-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 336 | | 50.3 | 459 | 245* [a] | 438 | 203* [a] | 5 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3644-1 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 91% | 88% | 90% | 36-148% |

(a) Outside control limits due to high level in sample relative to spike amount.

# Volatile Surrogate Recovery Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Method: SW846 8015 | Matrix: SO |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3693-1 | BH24035.D | 103.0 |
| MC3693-2 | BH24036.D | 106.0 |
| GBH1319-BSP | BH24014.D | 92.0 |
| GBH1319-MB | BH24013.D | 79.0 |
| MC3644-1MS | BH24024.D | 91.0 |
| MC3644-1MSD | BH24025.D | 88.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1318-CC1043 | Injection Date: | 09/21/11 |
| Lab File ID: | BH24012.D | Injection Time: | 05:03 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1319-MB | BH24013.D | 09/21/11 | 09:14 | 32.40 |
| GBH1319-BSP | BH24014.D | 09/21/11 | 09:54 | 32.39 |
| ZZZZZZ | BH24015.D | 09/21/11 | 10:34 | 32.39 |
| ZZZZZZ | BH24016.D | 09/21/11 | 11:14 | 32.40 |
| ZZZZZZ | BH24017.D | 09/21/11 | 11:55 | 32.39 |
| ZZZZZZ | BH24018.D | 09/21/11 | 12:35 | 32.39 |
| ZZZZZZ | BH24019.D | 09/21/11 | 13:15 | 32.39 |
| ZZZZZZ | BH24021.D | 09/21/11 | 14:35 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, 1L

| | | | |
|---|---|---|---|
| Check Std: | GBH1319-CC1043 | Injection Date: | 09/21/11 |
| Lab File ID: | BH24012A.D | Injection Time: | 05:03 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1319-MB | BH24013.D | 09/21/11 | 09:14 | 32.40 |
| GBH1319-BSP | BH24014.D | 09/21/11 | 09:54 | 32.39 |
| ZZZZZZ | BH24015.D | 09/21/11 | 10:34 | 32.39 |
| ZZZZZZ | BH24016.D | 09/21/11 | 11:14 | 32.40 |
| ZZZZZZ | BH24017.D | 09/21/11 | 11:55 | 32.39 |
| ZZZZZZ | BH24018.D | 09/21/11 | 12:35 | 32.39 |
| ZZZZZZ | BH24019.D | 09/21/11 | 13:15 | 32.39 |
| ZZZZZZ | BH24021.D | 09/21/11 | 14:35 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1319-CC1043 | Injection Date: | 09/21/11 |
| Lab File ID: | BH24022.D | Injection Time: | 15:15 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3644-1 | BH24023.D | 09/21/11 | 15:55 | 32.39 |
| MC3644-1MS | BH24024.D | 09/21/11 | 16:35 | 32.39 |
| MC3644-1MSD | BH24025.D | 09/21/11 | 17:15 | 32.39 |
| ZZZZZZ | BH24026.D | 09/21/11 | 17:55 | 32.39 |
| ZZZZZZ | BH24027.D | 09/21/11 | 18:36 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1319-CC1043 | Injection Date: | 09/21/11 |
| Lab File ID: | BH24028.D | Injection Time: | 19:16 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | SI [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BH24029.D | 09/21/11 | 19:56 | 32.39 |
| ZZZZZZ | BH24030.D | 09/21/11 | 20:36 | 32.39 |
| ZZZZZZ | BH24031.D | 09/21/11 | 21:16 | 32.39 |
| ZZZZZZ | BH24032.D | 09/21/11 | 21:56 | 32.39 |
| ZZZZZZ | BH24033.D | 09/21/11 | 22:36 | 32.39 |
| ZZZZZZ | BH24034.D | 09/21/11 | 23:16 | 32.39 |
| MC3693-1 | BH24035.D | 09/21/11 | 23:56 | 32.39 |
| MC3693-2 | BH24036.D | 09/22/11 | 00:35 | 32.39 |
| ZZZZZZ | BH24037.D | 09/22/11 | 01:15 | 32.39 |
| ZZZZZZ | BH24038.D | 09/22/11 | 01:54 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

New England ACCUTEST LABORATORIES

# GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26341-MB | BG31087.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3693-1, MC3693-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 16 | 12 | mg/kg | |
| | TPH (> C28-C40) | ND | 16 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 43% | 24-147% |

# Blank Spike Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26341-BS | BG31088.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3693-1, MC3693-2

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 160 | 121 | 76 | 63-139 |
| | TPH (> C28-C40) | 160 | 87.9 | 55 | 46-103 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 43% | 24-147% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26341-MS | BG31104.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |
| OP26341-MSD | BG31105.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |
| MC3693-1 | BG31107.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3693-1, MC3693-2

| CAS No. | Compound | MC3693-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 1030 | | 178 | 1030 | 0* a | 1030 | 0* a | 0 | 8-154/127 |
| | TPH (>C28-C40) | ND | | 178 | 74.6 | 42 | 76.0 | 43 | 2 | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3693-1 | Limits |
|---|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 29% | 30% | 32% | 24-147% |

(a) Outside control limits due to high level in sample relative to spike amount.

# Semivolatile Surrogate Recovery Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3693-1 | BG31107.D | 32.0 |
| MC3693-2 | BG31108.D | 32.0 |
| OP26341-BS | BG31088.D | 43.0 |
| OP26341-MB | BG31087.D | 43.0 |
| OP26341-MS | BG31104.D | 29.0 |
| OP26341-MSD | BG31105.D | 30.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 1-Chlorooctadecane | 24-147% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/24/11 |
| Lab File ID: | BG31084.D | Injection Time: | 21:57 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31085.D | 09/24/11 | 22:43 | 14.98 |
| ZZZZZZ | BG31086.D | 09/24/11 | 23:30 | 14.98 |
| OP26341-MB | BG31087.D | 09/25/11 | 00:16 | 14.97 |
| OP26341-BS | BG31088.D | 09/25/11 | 01:03 | 14.97 |
| ZZZZZZ | BG31089.D | 09/25/11 | 01:49 | 14.97 |
| ZZZZZZ | BG31090.D | 09/25/11 | 02:35 | 14.96 |
| ZZZZZZ | BG31091.D | 09/25/11 | 03:22 | 14.96 |
| ZZZZZZ | BG31092.D | 09/25/11 | 04:08 | 14.97 |
| ZZZZZZ | BG31093.D | 09/25/11 | 04:54 | 14.98 |
| ZZZZZZ | BG31094.D | 09/25/11 | 05:41 | 14.98 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.1

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# GC Surrogate Retention Time Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/25/11 |
| Lab File ID: | BG31095.D | Injection Time: | 06:27 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31096.D | 09/25/11 | 07:14 | 14.97 |
| ZZZZZZ | BG31097.D | 09/25/11 | 08:00 | 14.98 |
| ZZZZZZ | BG31098.D | 09/25/11 | 08:46 | 14.98 |
| OP26286-MS | BG31099.D | 09/25/11 | 09:32 | 14.99 |
| OP26286-MSD | BG31100.D | 09/25/11 | 10:19 | 14.98 |
| MC3644-1 | BG31101.D | 09/25/11 | 11:05 | 14.98 |
| ZZZZZZ | BG31102.D | 09/25/11 | 11:51 | 14.98 |
| ZZZZZZ | BG31103.D | 09/25/11 | 12:37 | 14.98 |
| OP26341-MS | BG31104.D | 09/25/11 | 13:24 | 14.98 |
| OP26341-MSD | BG31105.D | 09/25/11 | 14:10 | 14.98 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/25/11 |
| Lab File ID: | BG31106.D | Injection Time: | 14:56 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3693-1 | BG31107.D | 09/25/11 | 15:42 | 14.98 |
| MC3693-2 | BG31108.D | 09/25/11 | 16:28 | 14.98 |
| ZZZZZZ | BG31109.D | 09/25/11 | 17:14 | 14.98 |
| ZZZZZZ | BG31110.D | 09/25/11 | 18:01 | 14.99 |
| ZZZZZZ | BG31111.D | 09/25/11 | 18:47 | 14.98 |
| ZZZZZZ | BG31113.D | 09/25/11 | 20:19 | 14.96 |
| ZZZZZZ | BG31114.D | 09/25/11 | 21:06 | 14.96 |
| ZZZZZZ | BG31115.D | 09/25/11 | 21:52 | 14.97 |
| GBG1108-ECC110 | BG31116.D | 09/25/11 | 22:38 | 14.96 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.3

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## General Chemistry

# QC Data Summaries

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Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC3693
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC3693-1 Analyzed: 20-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE-8 (9-10)091611

| | | |
|---|---|---|
| Wet Weight (Total) | 26.718 | g |
| Tare Weight | 21.137 | g |
| Dry Weight (Total) | 26.24 | g |
| Solids, Percent | 91.4 | % |

Sample: MC3693-2 Analyzed: 20-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE-8 (9-10)091611 DUP

| | | |
|---|---|---|
| Wet Weight (Total) | 25.835 | g |
| Tare Weight | 18.998 | g |
| Dry Weight (Total) | 25.211 | g |
| Solids, Percent | 90.9 | % |

# SVE Install 2011 Data Review

**Laboratory SDG: MC3714**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 12/30/2011**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| VMP-35 (8-9) 091911 | SVE-29 (1-2) 091911 |
| SVE-11 (9-10) 091911 | TB-091911 |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

*Yes,* the laboratory case narrative indicated VOC LCS/LCSD recoveries were outside evaluation criteria. Professional judgment was used to qualify acetone in sample SVE-29 (1-2) 091911. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 1.8°C which is outside temperature criteria 4°C ± 2°C. Samples were received in good condition; no qualification of data was required. Additionally, the date format in sample IDs was amended to six digit format for consistency.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSV93-BS | VOCs | Acrolein | **374** | NA | 70-130 |
| MSV93-BS | VOCs | Acrylonitrile | **644** | NA | 70-130 |
| MSM1411-BS | VOCs | Acrolein | **46** | NA | 70-130 |
| MSM1411-BS | VOCs | Acrylonitrile | **288** | NA | 70-130 |
| MSM1411-BS | VOCs | 2-Chloroethyl vinyl ether | **38** | NA | 70-130 |
| MSM1411-BS | VOCs | 1,4-Dioxane | **64** | NA | 70-130 |
| MSM1411-BS | VOCs | Hexachlorobutadiene | **154** | NA | 70-130 |
| MSM1411-BS | VOCs | Tetrachloroethene | **143** | NA | 70-130 |
| MSM1411-BS | VOCs | Vinyl acetate | **54** | NA | 70-130 |
| MSK1837-BS/BSD | VOCs | Acrolein | **66/66** | 1 | 70-130/25 |
| MSK1837-BS/BSD | VOCs | Vinyl chloride | 70/**61** | 13 | 70-130/25 |

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS MSM1411-BS was associated with trip blank sample TB-091911. Trip blank samples are quality control samples and are not qualified.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| VMP-35 (8-9) 091911 | VOCs | Acrolein | **UJ** |
| VMP-35 (8-9) 091911 | VOCs | Vinyl chloride | **UJ** |
| SVE-11 (9-10) 091911 | VOCs | Acrolein | **UJ** |
| SVE-11 (9-10) 091911 | VOCs | Vinyl chloride | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

No

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

No

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

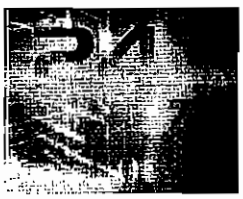
Yes, professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations greater than two times (2X) the reporting limit (RL), since acetone is not representative of site conditions. Additionally, USEPA Method 5035A states that acidification of certain soils with sodium bisulfate may produce a false positive acetone artifact of 100-200 ppb, or more. Acetone reported at concentrations less than 200 ppb (ug/kg) were qualified.

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| SVE-29 (1-2) 091911 | Acetone | 199 ug/kg | **U** | Professional Judgment |

New England ACCUTEST LABORATORIES

11/23/11





Technical Report for

Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC3714

Sampling Date: 09/19/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **88**

Reviewed on 12/30/2011

Reza Tand
Lab Director

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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# Sample Summary

Shell Oil

Job No: MC3714

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| MC3714-1 | 09/19/11 | 15:00 | LR | 09/20/11 | SO | Soil | VMP35 (8-9)91911 |
| MC3714-2 | 09/19/11 | 13:00 | LR | 09/20/11 | SO | Soil | SVE29 (1-2)91911 |
| MC3714-3 | 09/19/11 | 09:30 | LR | 09/20/11 | SO | Soil | SVE11 (9-10')91911 |
| MC3714-4 | 09/19/11 | 00:00 | LR | 09/20/11 | AQ | Trip Blank Water | TB91911 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

ACCUTEST Laboratories

2

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC3714 |
| **Site:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Ra | **Report Date** | 10/4/2011 3:18:43 PM |

3 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were collected on 09/19/2011 and were received at Accutest on 09/20/2011 properly preserved, at 1.8 Deg. C and intact. These Samples received an Accutest job number of MC3714. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSM1411

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3903-9MS, MC3903-9MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 1,4-Dioxane, 2-Chloroethyl vinyl ether, Acrolein, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for 1,1,1,2-Tetrachloroethane, 1,2,4-Trichlorobenzene, 1,4-Dioxane, 2-Chloroethyl vinyl ether, Acetone, Bromomethane, Carbon disulfide, Carbon tetrachloride, Chloroethane, Chloromethane, Dibromochloromethane, Dichlorodifluoromethane, Vinyl Acetate, Vinyl chloride are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSM1411-BS, MC3903-9MS/9MSD for Acrylonitrile, Hexachlorobutadiene, Tetrachloroethene: Outside control limits. Associated samples are non-detect for this compound.

**Matrix** SO **Batch ID:** MSK1837

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3779-7MS, MC3779-7MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Acrolein are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for 2-Hexanone are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Blank Spike Duplicate Recovery(s) for Vinyl chloride, Acrolein are outside control limits. Blank Spike meets program technical requirements.

**Matrix** SO **Batch ID:** MSV93

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3751-4MS, MC3751-4MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,2-Dibromo-3-chloropropane, 1,4-Dioxane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSV93-BS/MS/MSD for Acrolein, Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

## Volatiles by GC By Method SW846 8015

| Matrix SO | Batch ID: GBH1319 |
|---|---|

- All samples were analyzed within the reeommended method holding time.
- All method blanks for this bateh meet method speeifie eriteria.
- Sample(s) MC3644-1MS, MC3644-1MSD were used as the QC samples indicated.
- MS/MSD Reeovery(s) for TPH-GRO (VOA) are outside eontrol limits. Outside eontrol limits due to high level in sample relative to spike amount.

| Matrix SO | Batch ID: GBH1325 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3836-3MS, MC3836-3MSD were used as the QC samples indicated.

## Extractables by GC By Method SW846-8015

| Matrix SO | Batch ID: OP26341 |
|---|---|

- All samples were extracted within the reeommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3693-1MS, MC3693-1MSD were used as the QC samples indicated.
- All method blanks for this bateh meet method specific criteria.
- MS/MSD Recovery(s) for TPH (C10-C28) are outside control limits. Outside control limits due to high level in sample relative to spike amount.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN36190 |
|---|---|

- Sample(s) MC3714-2DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC3714).

New England ACCUTEST LABORATORIES

## Sample Results

Report of Analysis

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP35 (8-9)91911 | | |
| Lab Sample ID: | MC3714-1 | Date Sampled: | 09/19/11 |
| Matrix: | SO - Soil | Date Received: | 09/20/11 |
| Method: | SW846 8260B | Percent Solids: | 83.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K54993.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 2.54 g | 10.0 ml | 20.0 ul |
| Run #2 | | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 6200 | 1400 | ug/kg | |
| 107-02-8 | Acrolein | ND | 31000 | 21000 | ug/kg | UJ |
| 107-13-1 | Acrylonitrile | ND | 6200 | 2500 | ug/kg | |
| 71-43-2 | Benzene | ND | 620 | 150 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 6200 | 230 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6200 | 1300 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2500 | 260 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2500 | 580 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2500 | 830 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 6200 | 1500 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 13000 | 6200 | 1600 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 2500 | 6200 | 200 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 6200 | 800 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 6200 | 1200 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2500 | 280 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2500 | 120 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6200 | 320 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6200 | 6200 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2500 | 180 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6200 | 270 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 6200 | 170 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6200 | 1400 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6200 | 6200 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2500 | 800 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2500 | 240 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2500 | 190 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2500 | 180 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2500 | 170 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2500 | 420 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2500 | 190 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2500 | 180 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2500 | 390 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP35 (8-9)91911 | | |
| Lab Sample ID: | MC3714-1 | Date Sampled: | 09/19/11 |
| Matrix: | SO - Soil | Date Received: | 09/20/11 |
| Method: | SW846 8260B | Percent Solids: | 83.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2500 | 330 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2500 | 310 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2500 | 280 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6200 | 1400 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6200 | 230 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6200 | 240 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2500 | 1200 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2500 | 840 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 31000 | 31000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6200 | 3800 | ug/kg | |
| 100-41-4 | Ethylbenzene | 95700 | 2500 | 160 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 6200 | 6200 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6200 | 1300 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 9170 | 6200 | 200 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | 1780 | 6200 | 200 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2500 | 760 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6200 | 1000 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6200 | 380 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2500 | 440 | ug/kg | |
| 91-20-3 | Naphthalene | 23100 | 6200 | 6200 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 26000 | 6200 | 200 | ug/kg | |
| 100-42-5 | Styrene | ND | 6200 | 620 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6200 | 1200 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2500 | 220 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2500 | 210 | ug/kg | |
| 108-88-3 | Toluene | 82900 | 6200 | 220 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6200 | 1400 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6200 | 6200 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2500 | 230 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2500 | 310 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2500 | 240 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2500 | 1100 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6200 | 260 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 141000 | 6200 | 190 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 39900 | 6200 | 220 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 6200 | 1400 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2500 | 790 | ug/kg | UJ |
| | m,p-Xylene | 256000 | 2500 | 310 | ug/kg | |
| 95-47-6 | o-Xylene | 110000 | 2500 | 230 | ug/kg | |
| 1330-20-7 | Xylene (total) | 366000 | 2500 | 150 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP35 (8-9)91911 | | |
| Lab Sample ID: | MC3714-1 | Date Sampled: | 09/19/11 |
| Matrix: | SO - Soil | Date Received: | 09/20/11 |
| Method: | SW846 8260B | Percent Solids: | 83.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 107% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 103% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 107% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP35 (8-9)91911 | | |
| Lab Sample ID: | MC3714-1 | Date Sampled: | 09/19/11 |
| Matrix: | SO - Soil | Date Received: | 09/20/11 |
| Method: | SW846 8015 | Percent Solids: | 83.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24037.D | 1 | 09/22/11 | WS | n/a | n/a | GBH1319 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.05 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 3190 | 13 | 9.3 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 84% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP35 (8-9)91911 | | |
| Lab Sample ID: | MC3714-1 | Date Sampled: | 09/19/11 |
| Matrix: | SO - Soil | Date Received: | 09/20/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 83.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31115.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |
| Run #2 | BG31214.D | 5 | 09/29/11 | KD | 09/22/11 | OP26341 | GBG1113 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.5 g | 1.0 ml |
| Run #2 | 15.5 g | 1.0 ml |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 382 [a] | 96 | 73 | mg/kg | |
| | TPH (>C28-C40) | 21.2 | 19 | 15 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 42% | 47% | 24-147% |

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE29 (1-2)91911 | | |
| Lab Sample ID: | MC3714-2 | Date Sampled: | 09/19/11 |
| Matrix: | SO - Soil | Date Received: | 09/20/11 |
| Method: | SW846 8260B | Percent Solids: | 86.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2126.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.22 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~199~~ U | ~~5.6~~ 199 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 28 | 19 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.6 | 2.2 | ug/kg | |
| 71-43-2 | Benzene | 7.4 | 0.56 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.6 | 0.21 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.6 | 1.2 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.2 | 0.23 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.2 | 0.52 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.2 | 0.75 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.6 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.6 | 1.4 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 1.0 | 5.6 | 0.18 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 5.6 | 0.73 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.6 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.2 | 0.25 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.2 | 0.10 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.6 | 0.29 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.6 | 5.6 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.2 | 0.17 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.6 | 0.24 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.6 | 0.16 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.6 | 1.2 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.6 | 5.6 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.2 | 0.72 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.2 | 0.21 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.2 | 0.17 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.2 | 0.38 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.2 | 0.17 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.2 | 0.16 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.2 | 0.35 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE29 (1-2)91911 | | |
| Lab Sample ID: | MC3714-2 | Date Sampled: | 09/19/11 |
| Matrix: | SO - Soil | Date Received: | 09/20/11 |
| Method: | SW846 8260B | Percent Solids: | 86.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.2 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.2 | 0.28 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.2 | 0.25 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.6 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.6 | 0.21 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.6 | 0.21 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.2 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.2 | 0.76 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 28 | 28 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.6 | 3.5 | ug/kg | |
| 100-41-4 | Ethylbenzene | 2.3 | 2.2 | 0.14 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.6 | 5.6 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.6 | 1.2 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 1.0 | 5.6 | 0.18 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 0.39 | 5.6 | 0.18 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.2 | 0.69 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.6 | 0.93 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.6 | 0.34 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.2 | 0.40 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.6 | 5.6 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 1.0 | 5.6 | 0.18 | ug/kg | J |
| 100-42-5 | Styrene | ND | 5.6 | 0.56 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.6 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.2 | 0.19 | ug/kg | |
| 108-88-3 | Toluene | 53.5 | 5.6 | 0.20 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.6 | 1.2 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.6 | 5.6 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.2 | 0.28 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.2 | 0.22 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.2 | 1.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.6 | 0.23 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 3.1 | 5.6 | 0.18 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.2 | 5.6 | 0.20 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 5.6 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.2 | 0.72 | ug/kg | |
| | m,p-Xylene | 9.9 | 2.2 | 0.28 | ug/kg | |
| 95-47-6 | o-Xylene | 2.8 | 2.2 | 0.21 | ug/kg | |
| 1330-20-7 | Xylene (total) | 12.7 | 2.2 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE29 (1-2)91911 | | |
| Lab Sample ID: | MC3714-2 | Date Sampled: | 09/19/11 |
| Matrix: | SO - Soil | Date Received: | 09/20/11 |
| Method: | SW846 8260B | Percent Solids: | 86.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 88% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 109% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE29 (1-2)91911 | | |
| Lab Sample ID: | MC3714-2 | Date Sampled: | 09/19/11 |
| Matrix: | SO - Soil | Date Received: | 09/20/11 |
| Method: | SW846 8015 | Percent Solids: | 86.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24038.D | 1 | 09/22/11 | WS | n/a | n/a | GBH1319 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.21 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 107 | 15 | 11 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 95% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE29 (1-2)91911 | | |
| Lab Sample ID: | MC3714-2 | Date Sampled: | 09/19/11 |
| Matrix: | SO - Soil | Date Received: | 09/20/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 86.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31114.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.3 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 29.3 | 19 | 14 | mg/kg | |
| | TPH (>C28-C40) | 68.1 | 19 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 37% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE11 (9-10')91911 | | |
| Lab Sample ID: | MC3714-3 | Date Sampled: | 09/19/11 |
| Matrix: | SO - Soil | Date Received: | 09/20/11 |
| Method: | SW846 8260B | Percent Solids: | 85.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #I | K54992.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.36 g | 10.0 ml | 50.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 1400 | 330 | ug/kg | |
| 107-02-8 | Acrolein | ND | 7100 | 4800 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 1400 | 570 | ug/kg | |
| 71-43-2 | Benzene | ND | 140 | 36 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 1400 | 54 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 1400 | 300 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 570 | 60 | ug/kg | |
| 75-25-2 | Bromoform | ND | 570 | 130 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 570 | 190 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 1400 | 340 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 5890 | 1400 | 360 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 1630 | 1400 | 47 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | 1200 | 1400 | 190 | ug/kg | J |
| 75-15-0 | Carbon disulfide | ND | 1400 | 280 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 570 | 64 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 570 | 27 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 1400 | 74 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 1400 | 1400 | ug/kg | |
| 67-66-3 | Chloroform | ND | 570 | 42 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 1400 | 62 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 1400 | 40 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 1400 | 320 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1400 | 1400 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 570 | 190 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 570 | 55 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 570 | 43 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 570 | 41 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 570 | 40 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 570 | 98 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 570 | 43 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 570 | 41 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 570 | 91 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE11 (9-10')91911 | | |
| Lab Sample ID: | MC3714-3 | Date Sampled: | 09/19/11 |
| Matrix: | SO - Soil | Date Received: | 09/20/11 |
| Method: | SW846 8260B | Percent Solids: | 85.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 570 | 77 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 570 | 72 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 570 | 65 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 1400 | 330 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 1400 | 53 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 1400 | 55 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 570 | 280 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 570 | 200 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 7100 | 7100 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 1400 | 890 | ug/kg | |
| 100-41-4 | Ethylbenzene | 1680 | 570 | 37 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 1400 | 1400 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 1400 | 300 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 2850 | 1400 | 45 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | 801 | 1400 | 46 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 570 | 180 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 1400 | 240 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 1400 | 87 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 570 | 100 | ug/kg | |
| 91-20-3 | Naphthalene | 4200 | 1400 | 1400 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 10200 | 1400 | 46 | ug/kg | |
| 100-42-5 | Styrene | ND | 1400 | 140 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1400 | 290 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 570 | 50 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 570 | 48 | ug/kg | |
| 108-88-3 | Toluene | 95.2 | 1400 | 51 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1400 | 310 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1400 | 1400 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 570 | 52 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 570 | 73 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 570 | 56 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 570 | 260 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1400 | 60 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 17700 | 1400 | 45 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 458 | 1400 | 52 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 1400 | 340 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 570 | 180 | ug/kg | UJ |
| | m,p-Xylene | 980 | 570 | 72 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 570 | 53 | ug/kg | |
| 1330-20-7 | Xylene (total) | 980 | 570 | 36 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE11 (9-10')91911 | | |
| Lab Sample ID: | MC3714-3 | Date Sampled: | 09/19/11 |
| Matrix: | SO - Soil | Date Received: | 09/20/11 |
| Method: | SW846 8260B | Percent Solids: | 85.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 112% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 111% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE11 (9-10')91911 | | |
| Lab Sample ID: | MC3714-3 | Date Sampled: | 09/19/11 |
| Matrix: | SO - Soil | Date Received: | 09/20/11 |
| Method: | SW846 8015 | Percent Solids: | 85.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24132.D | 1 | 09/26/11 | WS | n/a | n/a | GBH1325 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.36 g | 10.0 ml | 50.0 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 1080 | 29 | 5.4 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 100% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE11 (9-10')91911 | | |
| Lab Sample ID: | MC3714-3 | Date Sampled: | 09/19/11 |
| Matrix: | SO - Soil | Date Received: | 09/20/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 85.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31096.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.2 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 208 | 19 | 15 | mg/kg | |
| | TPH (>C28-C40) | 41.1 | 19 | 15 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 34% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB91911 | | |
| Lab Sample ID: | MC3714-4 | Date Sampled: | 09/19/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/20/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M43704.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | TB91911 | | |
| Lab Sample ID: | MC3714-4 | Date Sampled: | 09/19/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/20/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB91911 | | |
| Lab Sample ID: | MC3714-4 | Date Sampled: | 09/19/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/20/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 86% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 93% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 84% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES



## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

# Shell Oil Products Chain Of Custody Record

URS

LAB (LOCATION)
☐ XENCO (_____)
☐ CALSCIENCE (_____)
☑ OTHER Accutest Labs; 495 Technology Ctr W
☐ SPL (_____)
Lab Vendor #

Please Check Appropriate Box: ☑ ENV. SERVICES ☐ MOTIVA RETAIL ☐ SHELL RETA ☐ MOTIVA SC&CH ☐ CONSULTANT ☐ LUBES ☐ SHELL PIPELINE ☐ OTHER

Print Bill To Contact Name: Jeff Adams
PO #

INCIDENT # (ENV. SERVICES): 9 7 2 1 6 6 4 0
SAP #: 3 4 0 0 6 1
☐ CHECK IF NO INCIDENT # APPLIES
DATE:
PAGE: ____ of ____

SAMPLING COMPANY: URS CORPORATION
LOG CODE:
ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300; ST. LOUIS, MO 63110
PROJECT CONTACT: Elizabeth Kunkel
TELEPHONE: 314-743-4179
FAX: 314-429-0462
BILL TO CONTACT E-MAIL: elizabeth.kunkel@urscorp.com

SITE ADDRESS: 170 EAST RAND AVENUE – HARTFORD
State: IL
LAB DELIVERABLE TO: PHONE NO:
E-MAIL:
CONSULTANT PROJECT NO: Roxana SVE Install 2011 / 21582593.00014
SAMPLER NAME(S) PRINT:
LAB USE ONLY: MC3714

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (10 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEKEND

REQUESTED ANALYSIS

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY:
DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD
TEMPERATURE ON RECEIPT C°: Cooler #1 Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
* Please include "J" values on Reports.
* Please provide sample receipt upon login.
☑ SHELL CONTRACT RATE APPLIES
☐ STATE REIMBURSEMENT RATE APPLIES
☐ EDD NOT NEEDED
☑ RECEIPT VERIFICATION REQUESTED
☐ PROVIDE EDD DISK

FIELD NOTES:
TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE HCL | HNO3 | H2SO4 | NaOH | Na2S2O3 | NONE | ZnAc | # of Cont | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | VMP35(8-9)9-19-11 | 9-19-11 | 1500 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 2 | SVE 29(1-2)9-19-11 | 9-19-11 | 1300 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 3 | SVE 11(9-10')9-19-11 | 9-19-11 | 0930 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 4 | TB9-19-11 | 9-19-11 | | Water | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | 11B, 10H4, SD6 |

| Relinquished by (Signature) | Date | Time | Received by (Signature) | Date | Time |
|---|---|---|---|---|---|
| Linda Roth | 9-19-11 | 1710 | FedEx | | |
| FedEx First over | | | | 9/20/11 | 8:00 |
| | | | | Date | Time 1.8° |

05/2008 Revision

**MC3714: Chain of Custody**
**Page 1 of 2**

ACCUTEST LABORATORIES

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC3714 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 9/20/2011 Delivery Method: Client Service Action Required at Login: No

Project: 170 EAST RAND AVE HARTFORD IL No. Coolers: 1 Airbill #'s: N/A

| Cooler Security | Y | or | N | | Y | or | N |
|---|---|---|---|---|---|---|---|
| 1. Custody Seals Present: | ☑ | | ☐ | 3. COC Present: | ☑ | | ☐ |
| 2. Custody Seals Intact: | ☑ | | ☐ | 4. Smpl Dates/Time OK | ☑ | | ☐ |

| Cooler Temperature | Y | or | N |
|---|---|---|---|
| 1. Temp criteria achieved: | ☑ | | ☐ |
| 2. Cooler temp verification: | | Infared gun | |
| 3. Cooler media: | | Ice (bag) | |

| Quality Control Preservatio | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Trip Blank present / cooler: | ☑ | | ☐ | ☐ |
| 2. Trip Blank listed on COC: | ☑ | | ☐ | ☐ |
| 3. Samples preserved properly: | ☑ | | ☐ | |
| 4. VOCs headspace free: | ☑ | | ☐ | ☐ |

| Sample Integrity - Documentation | Y | or | N |
|---|---|---|---|
| 1. Sample labels present on bottles: | ☑ | | ☐ |
| 2. Container labeling complete: | ☑ | | ☐ |
| 3. Sample container label / COC agree: | ☑ | | ☐ |

| Sample Integrity - Condition | Y | or | N |
|---|---|---|---|
| 1. Sample recvd within HT: | ☑ | | ☐ |
| 2. All containers accounted for: | ☑ | | ☐ |
| 3. Condition of sample: | | Intact | |

| Sample Integrity - Instructions | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Analysis requested is clear: | ☑ | | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | | ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ | | ☐ | |
| 4. Compositing instructions clear: | ☐ | | ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ | | ☐ | ☑ |

Comments

Accutest Laboratories
V.508 481 6200
495 Technology Center West, Bldg One
F 508 481 7753
Marlborough, MA
www.accutest.com

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4

**MC3714: Chain of Custody**
**Page 2 of 2**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3714

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3714-1 Collected: 19-SEP-11 15:00 By: LR | | | Received: 20-SEP-11 By: JB | | | |
| VMP35 (8-9)91911 | | | | | | |
| MC3714-1 | SM21 2540 B MOD. | 20-SEP-11 | MC | | | %SOL |
| MC3714-1 | SW846 8015 | 22-SEP-11 01:15 | WS | | | V8015GRO |
| MC3714-1 | SW846 8260B | 23-SEP-11 19:00 | GK | | | V8260SL |
| MC3714-1 | SW846-8015 | 25-SEP-11 21:52 | KD | 22-SEP-11 | AF | B8015DROORO |
| MC3714-1 | SW846-8015 | 29-SEP-11 11:48 | KD | 22-SEP-11 | AF | B8015DROORO |
| MC3714-2 Collected: 19-SEP-11 13:00 By: LR | | | Received: 20-SEP-11 By: JB | | | |
| SVE29 (1-2)91911 | | | | | | |
| MC3714-2 | SM21 2540 B MOD. | 20-SEP-11 | MC | | | %SOL |
| MC3714-2 | SW846 8015 | 22-SEP-11 01:54 | WS | | | V8015GRO |
| MC3714-2 | SW846-8015 | 25-SEP-11 21:06 | KD | 22-SEP-11 | AF | B8015DROORO |
| MC3714-2 | SW846 8260B | 27-SEP-11 12:57 | AMY | | | V8260SL |
| MC3714-3 Collected: 19-SEP-11 09:30 By: LR | | | Received: 20-SEP-11 By: JB | | | |
| SVE11 (9-10')91911 | | | | | | |
| MC3714-3 | SM21 2540 B MOD. | 20-SEP-11 | MC | | | %SOL |
| MC3714-3 | SW846 8260B | 23-SEP-11 18:32 | GK | | | V8260SL |
| MC3714-3 | SW846-8015 | 25-SEP-11 07:14 | KD | 22-SEP-11 | AF | B8015DROORO |
| MC3714-3 | SW846 8015 | 26-SEP-11 18:37 | WS | | | V8015GRO |
| MC3714-4 Collected: 19-SEP-11 00:00 By: LR | | | Received: 20-SEP-11 By: JB | | | |
| TB91911 | | | | | | |
| MC3714-4 | SW846 8260B | 01-OCT-11 14:56 | JP | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/20/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3714-1.1 | Walk In Ref #9 | Miranda Cardullo | 09/20/11 16:39 | Retrieve from Storage |
| MC3714-1.1 | Miranda Cardullo | Walk In Ref #9 | 09/20/11 17:14 | Return to Storage |
| MC3714-1.1 | Walk In Ref #9 | Bijan Jafari | 09/22/11 16:34 | Retrieve from Storage |
| MC3714-1.1 | Bijan Jafari | Walk In Ref #9 | 09/22/11 16:37 | Return to Storage |
| MC3714-1.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3714-1.5 | VOC Ref #10 | William Shao | 09/21/11 09:00 | Retrieve from Storage |
| MC3714-1.5 | William Shao | GCBH | 09/21/11 09:00 | Load on Instrument |
| MC3714-1.5 | GCBH | William Shao | 09/21/11 09:00 | Unload from Instrument |
| MC3714-1.5 | William Shao | VOC Ref #10 | 09/21/11 09:00 | Return to Storage |
| MC3714-1.5 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3714-1.6 | VOC Ref #10 | Gary Krasinski | 09/21/11 14:42 | Retrieve from Storage |
| MC3714-1.6 | Gary Krasinski | VOC Ref #10 | 09/26/11 11:50 | Return to Storage |
| MC3714-1.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3714-2.1 | Walk In Ref #9 | Miranda Cardullo | 09/20/11 16:39 | Retrieve from Storage |
| MC3714-2.1 | Miranda Cardullo | Walk In Ref #9 | 09/20/11 17:14 | Return to Storage |
| MC3714-2.1 | Walk In Ref #9 | Bijan Jafari | 09/22/11 16:34 | Retrieve from Storage |
| MC3714-2.1 | Bijan Jafari | Walk In Ref #9 | 09/22/11 16:37 | Return to Storage |
| MC3714-2.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3714-2.4 | VOC Ref #10 | Amy Min Yang | 09/27/11 10:04 | Retrieve from Storage |
| MC3714-2.4 | Amy Min Yang | GCMSV | 09/27/11 10:04 | Load on Instrument |
| MC3714-2.4 | GCMSV | Amy Min Yang | 10/04/11 17:33 | Unload from Instrument |
| MC3714-2.4 | Amy Min Yang | VOC Ref #10 | 10/04/11 17:33 | Return to Storage |
| MC3714-2.4 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3714-2.5 | VOC Ref #10 | William Shao | 09/21/11 09:00 | Retrieve from Storage |
| MC3714-2.5 | William Shao | GCBH | 09/21/11 09:00 | Load on Instrument |
| MC3714-2.5 | GCBH | William Shao | 09/21/11 09:00 | Unload from Instrument |
| MC3714-2.5 | William Shao | VOC Ref #10 | 09/21/11 09:00 | Return to Storage |
| MC3714-2.5 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3714-2.6 | VOC Ref #10 | Gary Krasinski | 09/21/11 14:42 | Retrieve from Storage |
| MC3714-2.6 | Gary Krasinski | VOC Ref #10 | 09/26/11 11:50 | Return to Storage |
| MC3714-2.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3714-3.1 | Walk In Ref #9 | Miranda Cardullo | 09/20/11 16:39 | Retrieve from Storage |
| MC3714-3.1 | Miranda Cardullo | Walk In Ref #9 | 09/20/11 17:14 | Return to Storage |
| MC3714-3.1 | Walk In Ref #9 | Bijan Jafari | 09/22/11 16:34 | Retrieve from Storage |
| MC3714-3.1 | Bijan Jafari | Walk In Ref #9 | 09/22/11 16:37 | Return to Storage |
| MC3714-3.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |

# Accutest Internal Chain of Custody



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/20/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3714-3.6 | VOC Ref #10 | Gary Krasinski | 09/21/11 14:42 | Retrieve from Storage |
| MC3714-3.6 | Gary Krasinski | VOC Ref #10 | 09/26/11 11:50 | Return to Storage |
| MC3714-3.6 | Scott Parsick | | 11/03/11 14:23 | Disposed |
| MC3714-4.1 | VOC Ref #5 | Dana Tyron | 10/01/11 13:51 | Retrieve from Storage |
| MC3714-4.1 | Dana Tyron | GCMSM | 10/01/11 13:51 | Load on Instrument |
| MC3714-4.1 | GCMSM | Dana Tyron | 10/03/11 10:11 | Unload from Instrument |
| MC3714-4.1 | Dana Tyron | VOC Ref #5 | 10/03/11 10:12 | Return to Storage |
| MC3714-4.1 | Scott Parsick | | 11/03/11 14:23 | Disposed |

New England ACCUTEST LABORATORIES



## GC/MS Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1837-MB | K54978.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-1, MC3714-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 58 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 850 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 250 | 100 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 6.3 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 9.5 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 52 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 10 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 24 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 34 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 59 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 63 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 8.3 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 33 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 48 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 11 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 4.7 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 13 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 250 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 7.4 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 11 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 7.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 56 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 250 | 250 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 33 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 100 | 9.6 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 7.5 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 7.2 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 7.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 17 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 7.6 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 7.3 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 16 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 13 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 11 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 58 | ug/kg | |

# Method Blank Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1837-MB | K54978.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-1, MC3714-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 9.2 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 9.6 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 50 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 34 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 160 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 6.5 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 250 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 52 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 7.9 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.1 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 31 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 42 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 15 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 18 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 250 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 8.1 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 25 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 8.8 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 8.4 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 9.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 55 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 250 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 9.2 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 13 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 9.8 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 46 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 10 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 7.9 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 9.1 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 59 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 32 | ug/kg | |
| | m,p-Xylene | ND | 100 | 13 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 9.2 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 6.3 | ug/kg | |

# Method Blank Summary

Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1837-MB | K54978.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-1, MC3714-3

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 107% | 70-130% |
| 2037-26-5 | Toluene-D8 | 105% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 111% | 70-130% |

# Method Blank Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-MB | V2121.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary

Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-MB | V2121.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary

Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-MB | V2121.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-2

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

# Method Blank Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1411-MB | M43702.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |

# Method Blank Summary

Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1411-MB | M43702.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

# Method Blank Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1411-MB | M43702.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-4

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | 70-130% |
| 2037-26-5 | Toluene-D8 | 94% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 86% | 70-130% |

# Blank Spike Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-BS | V2120.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-2

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 51.7 | 103 | 70-130 |
| 107-02-8 | Acrolein | 250 | 935 | 374* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 322 | 644* a | 70-130 |
| 71-43-2 | Benzene | 50 | 55.4 | 111 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 50.4 | 101 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 51.6 | 103 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 52.2 | 104 | 70-130 |
| 75-25-2 | Bromoform | 50 | 47.5 | 95 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 49.5 | 99 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 57.9 | 116 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 61.2 | 122 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 55.1 | 110 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 52.8 | 106 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 48.6 | 97 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 49.1 | 98 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 57.5 | 115 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 56.9 | 114 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 19.1 | 38 | 10-160 |
| 67-66-3 | Chloroform | 50 | 53.5 | 107 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 48.2 | 96 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 51.5 | 103 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 53.0 | 106 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 48.9 | 98 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 51.6 | 103 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 53.0 | 106 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 56.4 | 113 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 52.7 | 105 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 51.9 | 104 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 51.2 | 102 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 57.1 | 114 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 53.2 | 106 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 55.1 | 110 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 52.2 | 104 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 52.6 | 105 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 54.0 | 108 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 52.4 | 105 | 70-130 |

# Blank Spike Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-BS | V2120.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-2

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 55.4 | 111 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 52.1 | 104 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 54.3 | 109 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 57.4 | 115 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 254 | 102 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 55.6 | 111 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 57.4 | 115 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 54.6 | 109 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 60.5 | 121 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 62.6 | 125 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 57.6 | 115 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 52.5 | 105 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 61.1 | 122 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 53.6 | 107 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 58.8 | 118 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 57.3 | 115 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 54.5 | 109 | 70-130 |
| 100-42-5 | Styrene | 50 | 56.6 | 113 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 53.8 | 108 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 55.9 | 112 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 52.5 | 105 | 70-130 |
| 108-88-3 | Toluene | 50 | 52.0 | 104 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 55.7 | 111 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 58.6 | 117 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 49.8 | 100 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 52.3 | 105 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 50.7 | 101 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 45.6 | 91 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 54.8 | 110 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 52.6 | 105 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 52.8 | 106 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 44.3 | 89 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 41.9 | 84 | 70-130 |
| | m,p-Xylene | 100 | 116 | 116 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 56.4 | 113 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 173 | 115 | 70-130 |

# Blank Spike Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-BS | V2120.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-2

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1411-BS | M43700.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-4

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 40.9 | 82 | 70-130 |
| 107-02-8 | Acrolein | 250 | 115 | 46* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 144 | 288* b | 70-130 |
| 71-43-2 | Benzene | 50 | 48.3 | 97 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 54.9 | 110 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 50.7 | 101 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 54.9 | 110 | 70-130 |
| 75-25-2 | Bromoform | 50 | 53.1 | 106 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 45.8 | 92 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 51.6 | 103 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 51.1 | 102 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 51.8 | 104 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 49.9 | 100 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 44.5 | 89 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 62.9 | 126 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 57.1 | 114 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 42.0 | 84 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 19.1 | 38* a | 70-130 |
| 67-66-3 | Chloroform | 50 | 48.5 | 97 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 35.9 | 72 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 47.3 | 95 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 48.6 | 97 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 35.9 | 72 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 60.5 | 121 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 52.6 | 105 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 53.3 | 107 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 53.9 | 108 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 51.3 | 103 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 45.9 | 92 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 44.8 | 90 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 51.6 | 103 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 50.0 | 100 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 48.2 | 96 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 50.0 | 100 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 48.2 | 96 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 47.4 | 95 | 70-130 |

# Blank Spike Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1411-BS | M43700.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-4

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 56.2 | 112 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 53.8 | 108 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 48.0 | 96 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 50.1 | 100 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 159 | 64* [a] | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 40.4 | 81 | 77-137 |
| 100-41-4 | Ethylbenzene | 50 | 57.0 | 114 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 76.9 | 154* [b] | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 41.9 | 84 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 57.1 | 114 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 54.1 | 108 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 40.6 | 81 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 35.1 | 70 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 49.9 | 100 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 46.1 | 92 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 44.0 | 88 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 48.7 | 97 | 70-130 |
| 100-42-5 | Styrene | 50 | 55.6 | 111 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 62.5 | 125 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 35.8 | 72 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 71.6 | 143* [b] | 70-130 |
| 108-88-3 | Toluene | 50 | 54.9 | 110 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 56.4 | 113 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 61.3 | 123 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 54.5 | 109 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 48.0 | 96 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 55.8 | 112 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 52.2 | 104 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 35.1 | 70 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 49.0 | 98 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 48.4 | 97 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 26.9 | 54* [a] | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 37.7 | 75 | 70-130 |
| | m,p-Xylene | 100 | 120 | 120 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 59.1 | 118 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 179 | 119 | 70-130 |

# Blank Spike Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1411-BS | M43700.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-4

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | 70-130% |
| 2037-26-5 | Toluene-D8 | 92% | 70-130% |
| 460-00-4 | 4-Bromofluorohenzene | 85% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1837-BS | K54976.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |
| MSK1837-BSD | K54977.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-1, MC3714-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 2240 | 90 | 2380 | 95 | 6 | 70-130/25 |
| 107-02-8 | Acrolein | 12500 | 8290 | 66* a | 8210 | 66* a | 1 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 2500 | 2360 | 94 | 2510 | 100 | 6 | 70-130/25 |
| 71-43-2 | Benzene | 2500 | 2400 | 96 | 2320 | 93 | 3 | 70-130/25 |
| 108-86-1 | Bromobenzene | 2500 | 2460 | 98 | 2370 | 95 | 4 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 2500 | 2390 | 96 | 2360 | 94 | 1 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 2500 | 2470 | 99 | 2400 | 96 | 3 | 70-130/25 |
| 75-25-2 | Bromoform | 2500 | 2560 | 102 | 2590 | 104 | 1 | 70-130/25 |
| 74-83-9 | Bromomethane | 2500 | 2220 | 89 | 2070 | 83 | 7 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 2530 | 101 | 2630 | 105 | 4 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 2500 | 2570 | 103 | 2440 | 98 | 5 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2510 | 100 | 2350 | 94 | 7 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2430 | 97 | 2310 | 92 | 5 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 2500 | 2370 | 95 | 2280 | 91 | 4 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2380 | 95 | 2240 | 90 | 6 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 2500 | 2580 | 103 | 2460 | 98 | 5 | 70-130/25 |
| 75-00-3 | Chloroethane | 2500 | 2350 | 94 | 2290 | 92 | 3 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 1840 | 74 | 1930 | 77 | 5 | 10-160/25 |
| 67-66-3 | Chloroform | 2500 | 2390 | 96 | 2340 | 94 | 2 | 70-130/25 |
| 74-87-3 | Chloromethane | 2500 | 2110 | 84 | 2030 | 81 | 4 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2390 | 96 | 2270 | 91 | 5 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2480 | 99 | 2360 | 94 | 5 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 2500 | 2000 | 80 | 2200 | 88 | 10 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 2500 | 2630 | 105 | 2590 | 104 | 2 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 2500 | 2530 | 101 | 2560 | 102 | 1 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2470 | 99 | 2410 | 96 | 2 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2490 | 100 | 2390 | 96 | 4 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2480 | 99 | 2390 | 96 | 4 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 2300 | 92 | 2170 | 87 | 6 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2400 | 96 | 2310 | 92 | 4 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2290 | 92 | 2270 | 91 | 1 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2450 | 98 | 2380 | 95 | 3 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2330 | 93 | 2280 | 91 | 2 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2440 | 98 | 2360 | 94 | 3 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2390 | 96 | 2340 | 94 | 2 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2430 | 97 | 2410 | 96 | 1 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1837-BS | K54976.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |
| MSK1837-BSD | K54977.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-1, MC3714-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2690 | 108 | 2530 | 101 | 6 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2450 | 98 | 2320 | 93 | 5 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2500 | 100 | 2430 | 97 | 3 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2660 | 106 | 2600 | 104 | 2 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 12500 | 11000 | 88 | 12300 | 98 | 11 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2410 | 96 | 2520 | 101 | 4 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 2500 | 2600 | 104 | 2490 | 100 | 4 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2420 | 97 | 2270 | 91 | 6 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 2500 | 2750 | 110 | 2790 | 112 | 1 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 2500 | 2860 | 114 | 2710 | 108 | 5 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2520 | 101 | 2420 | 97 | 4 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2300 | 92 | 2390 | 96 | 4 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 2350 | 94 | 2510 | 100 | 7 | 70-130/25 |
| 74-95-3 | Methylene bromide | 2500 | 2390 | 96 | 2390 | 96 | 0 | 70-130/25 |
| 75-09-2 | Methylene chloride | 2500 | 2470 | 99 | 2420 | 97 | 2 | 70-130/25 |
| 91-20-3 | Naphthalene | 2500 | 2160 | 86 | 2320 | 93 | 7 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 2500 | 2500 | 100 | 2370 | 95 | 5 | 70-130/25 |
| 100-42-5 | Styrene | 2500 | 2690 | 108 | 2570 | 103 | 5 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2580 | 103 | 2490 | 100 | 4 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2350 | 94 | 2450 | 98 | 4 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 2500 | 2620 | 105 | 2490 | 100 | 5 | 70-130/25 |
| 108-88-3 | Toluene | 2500 | 2440 | 98 | 2370 | 95 | 3 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 2200 | 88 | 2160 | 86 | 2 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2350 | 94 | 2360 | 94 | 0 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2390 | 96 | 2310 | 92 | 3 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2400 | 96 | 2390 | 96 | 0 | 70-130/25 |
| 79-01-6 | Trichloroethene | 2500 | 2460 | 98 | 2370 | 95 | 4 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2350 | 94 | 2200 | 88 | 7 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2320 | 93 | 2430 | 97 | 5 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2430 | 97 | 2310 | 92 | 5 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2420 | 97 | 2310 | 92 | 5 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 2500 | 1750 | 70 | 1780 | 71 | 2 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 2500 | 1740 | 70 | 1530 | 61* a | 13 | 70-130/25 |
| | m,p-Xylene | 5000 | 5230 | 105 | 5030 | 101 | 4 | 70-130/25 |
| 95-47-6 | o-Xylene | 2500 | 2600 | 104 | 2480 | 99 | 5 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 7500 | 7830 | 104 | 7510 | 100 | 4 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1837-BS | K54976.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |
| MSK1837-BSD | K54977.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-1, MC3714-3

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 102% | 99% | 70-130% |
| 2037-26-5 | Toluene-D8 | 106% | 102% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 103% | 99% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3779-7MS | K54990.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |
| MC3779-7MSD | K54991.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |
| MC3779-7 | K54989.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-1, MC3714-3

| CAS No. | Compound | MC3779-7 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 4390 | 5450 | 124 | 5140 | 117 | 6 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 22000 | 20100 | 92 | 19500 | 89 | 3 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 4390 | 5130 | 117 | 4710 | 107 | 9 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 4390 | 4570 | 104 | 4680 | 107 | 2 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 4390 | 4570 | 104 | 4680 | 107 | 2 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 4390 | 4660 | 106 | 4650 | 106 | 0 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 4390 | 4760 | 108 | 4770 | 109 | 0 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 4390 | 5120 | 117 | 5020 | 114 | 2 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 4390 | 4160 | 95 | 4410 | 100 | 6 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 4390 | 5550 | 126 | 5460 | 124 | 2 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 4390 | 4730 | 108 | 4880 | 111 | 3 | 70-130/30 |
| 135-98-8 | sec-Butylhenzene | ND | | 4390 | 4640 | 106 | 4810 | 110 | 4 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 4390 | 4540 | 103 | 4730 | 108 | 4 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 4390 | 4410 | 100 | 4650 | 106 | 5 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 4390 | 4580 | 104 | 4800 | 109 | 5 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 4390 | 4710 | 107 | 4860 | 111 | 3 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 4390 | 4400 | 100 | 4770 | 109 | 8 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 4390 | 3870 | 88 | 3610 | 82 | 7 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 4390 | 4620 | 105 | 4720 | 108 | 2 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 4390 | 3920 | 89 | 4140 | 94 | 5 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 4390 | 4440 | 101 | 4580 | 104 | 3 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 4390 | 4630 | 105 | 4700 | 107 | 2 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 4390 | 4640 | 106 | 4270 | 97 | 8 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 4390 | 5090 | 116 | 5080 | 116 | 0 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 4390 | 5100 | 116 | 4900 | 112 | 4 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 4390 | 4720 | 108 | 4830 | 110 | 2 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 4390 | 4660 | 106 | 4770 | 109 | 2 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 4390 | 4600 | 105 | 4800 | 109 | 4 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 4390 | 4240 | 97 | 4560 | 104 | 7 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 4390 | 4490 | 102 | 4660 | 106 | 4 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 4390 | 4630 | 105 | 4540 | 103 | 2 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 4390 | 4610 | 105 | 4930 | 112 | 7 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 4390 | 4410 | 100 | 4540 | 103 | 3 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 4390 | 4550 | 104 | 4700 | 107 | 3 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 4390 | 4580 | 104 | 4700 | 107 | 3 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 4390 | 4770 | 109 | 4640 | 106 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3779-7MS | K54990.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |
| MC3779-7MSD | K54991.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |
| MC3779-7 | K54989.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-1, MC3714-3

| CAS No. | Compound | MC3779-7 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 4390 | 4760 | 108 | 4930 | 112 | 4 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 4390 | 4600 | 105 | 4830 | 110 | 5 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 4390 | 4750 | 108 | 4720 | 108 | 1 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 4390 | 5150 | 117 | 5090 | 116 | 1 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 22000 | 26200 | 119 | 23200 | 106 | 12 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 4390 | 5170 | 118 | 4960 | 113 | 4 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 4390 | 4840 | 110 | 5010 | 114 | 3 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 4390 | 4630 | 105 | 4770 | 109 | 3 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 4390 | 6180 | 141* [a] | 5940 | 135* [a] | 4 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 4390 | 5270 | 120 | 5450 | 124 | 3 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 4390 | 4620 | 105 | 4910 | 112 | 6 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 4390 | 4660 | 106 | 4650 | 106 | 0 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 4390 | 5400 | 123 | 4970 | 113 | 8 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 4390 | 4840 | 110 | 4740 | 108 | 2 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 4390 | 4720 | 108 | 4810 | 110 | 2 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 4390 | 4890 | 111 | 4540 | 103 | 7 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 4390 | 4630 | 105 | 4790 | 109 | 3 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 4390 | 4890 | 111 | 5030 | 115 | 3 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 4390 | 4840 | 110 | 4940 | 113 | 2 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 4390 | 5010 | 114 | 4710 | 107 | 6 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 4390 | 4830 | 110 | 4980 | 113 | 3 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 4390 | 4700 | 107 | 4780 | 109 | 2 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 4390 | 4610 | 105 | 4500 | 103 | 2 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 4390 | 4610 | 105 | 4610 | 105 | 0 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 4390 | 4620 | 105 | 4810 | 110 | 4 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 4390 | 4800 | 109 | 4770 | 109 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 4390 | 4710 | 107 | 4830 | 110 | 3 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 4390 | 4410 | 100 | 4630 | 105 | 5 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 4390 | 4920 | 112 | 4690 | 107 | 5 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 4390 | 4510 | 103 | 4660 | 106 | 3 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 4390 | 4490 | 102 | 4620 | 105 | 3 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 4390 | 3420 | 78 | 3180 | 72 | 7 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 4390 | 3400 | 77 | 3960 | 90 | 15 | 70-130/30 |
| | m,p-Xylene | ND | | 8780 | 9690 | 110 | 10100 | 115 | 4 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 4390 | 4820 | 110 | 4910 | 112 | 2 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 13200 | 14500 | 110 | 15000 | 114 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3779-7MS | K54990.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |
| MC3779-7MSD | K54991.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |
| MC3779-7 | K54989.D | 1 | 09/23/11 | GK | n/a | n/a | MSK1837 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-1, MC3714-3

| CAS No. | Surrogate Recoveries | MS | MSD | MC3779-7 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 103% | 105% | 110% | 70-130% |
| 2037-26-5 | Toluene-D8 | 106% | 110% | 106% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 103% | 105% | 110% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3751-4MS | V2134.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4MSD | V2135.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4 | V2130.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-2

| CAS No. | Compound | MC3751-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 17.6 | | 128 | 112 | 74 | 123 | 79 | 9 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 638 | 1830 | 287* [a] | 1780 | 267* [a] | 3 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 128 | 695 | 545* [a] | 746 | 559* [a] | 7 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 128 | 126 | 99 | 134 | 100 | 6 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 128 | 115 | 90 | 123 | 92 | 7 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 128 | 123 | 96 | 133 | 100 | 8 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 128 | 119 | 93 | 129 | 97 | 8 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 128 | 130 | 102 | 141 | 106 | 8 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 128 | 103 | 81 | 111 | 83 | 7 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 128 | 180 | 141* [b] | 203 | 152* [b] | 12 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 128 | 134 | 105 | 143 | 107 | 6 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 128 | 121 | 95 | 129 | 97 | 6 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 128 | 115 | 90 | 124 | 93 | 8 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 128 | 104 | 82 | 112 | 84 | 7 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 128 | 103 | 81 | 110 | 82 | 7 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 128 | 128 | 100 | 137 | 103 | 7 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 128 | 121 | 95 | 129 | 97 | 6 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 128 | ND | 0* [b] | ND | 0* [b] | nc | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 128 | 118 | 93 | 129 | 97 | 9 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 128 | 109 | 85 | 117 | 88 | 7 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 128 | 114 | 89 | 121 | 91 | 6 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 128 | 117 | 92 | 124 | 93 | 6 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 128 | 166 | 130 | 181 | 136* [b] | 9 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 128 | 126 | 99 | 138 | 103 | 9 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 128 | 139 | 109 | 150 | 112 | 8 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 128 | 129 | 101 | 137 | 103 | 6 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 128 | 119 | 93 | 125 | 94 | 5 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 128 | 116 | 91 | 124 | 93 | 7 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 128 | 103 | 81 | 107 | 80 | 4 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 128 | 125 | 98 | 135 | 101 | 8 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 128 | 125 | 98 | 135 | 101 | 8 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 128 | 122 | 96 | 130 | 97 | 6 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 128 | 118 | 93 | 128 | 96 | 8 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 128 | 118 | 93 | 126 | 94 | 7 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 128 | 124 | 97 | 133 | 100 | 7 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 128 | 131 | 103 | 141 | 106 | 7 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3751-4MS | V2134.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4MSD | V2135.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4 | V2130.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-2

| CAS No. | Compound | MC3751-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 128 | 119 | 93 | 130 | 97 | 9 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 128 | 116 | 91 | 124 | 93 | 7 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 128 | 126 | 99 | 137 | 103 | 8 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 128 | 141 | 111 | 152 | 114 | 8 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 638 | 824 | 129 | 961 | 144* [b] | 15 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 128 | 161 | 126 | 173 | 130 | 7 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 2.9 | | 128 | 132 | 101 | 141 | 104 | 7 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 128 | 117 | 92 | 125 | 94 | 7 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 128 | 198 | 155* [b] | 218 | 163* [b] | 10 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 128 | 137 | 107 | 148 | 111 | 8 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 128 | 126 | 99 | 135 | 101 | 7 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 128 | 131 | 103 | 144 | 108 | 9 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 128 | 208 | 163* [b] | 225 | 169* [b] | 8 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 128 | 132 | 104 | 145 | 109 | 9 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 128 | 130 | 102 | 141 | 106 | 8 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 128 | 160 | 125 | 171 | 128 | 7 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 0.77 | J | 128 | 122 | 95 | 129 | 96 | 6 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 128 | 126 | 99 | 133 | 100 | 5 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 128 | 118 | 93 | 128 | 96 | 8 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 128 | 159 | 125 | 172 | 129 | 8 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 128 | 118 | 93 | 125 | 94 | 6 | 70-130/30 |
| 108-88-3 | Toluene | 7.7 | | 128 | 122 | 90 | 130 | 92 | 6 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 128 | 127 | 100 | 133 | 100 | 5 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 128 | 132 | 104 | 138 | 103 | 4 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 128 | 108 | 85 | 118 | 88 | 9 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 128 | 134 | 105 | 144 | 108 | 7 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 128 | 114 | 89 | 121 | 91 | 6 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 128 | 96.4 | 76 | 102 | 76 | 6 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 128 | 157 | 123 | 174 | 130 | 10 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 0.88 | J | 128 | 118 | 92 | 125 | 93 | 6 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 128 | 116 | 91 | 123 | 92 | 6 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 128 | 119 | 93 | 119 | 89 | 0 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 128 | 91.5 | 72 | 97.4 | 73 | 6 | 70-130/30 |
| | m,p-Xylene | ND | | 255 | 260 | 102 | 278 | 104 | 7 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 128 | 126 | 99 | 137 | 103 | 8 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 383 | 386 | 101 | 415 | 104 | 7 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3751-4MS | V2134.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4MSD | V2135.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4 | V2130.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-2

| CAS No. | Surrogate Recoveries | MS | MSD | MC3751-4 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | 99% | 92% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 97% | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | 97% | 95% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3903-9MS | M43708.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |
| MC3903-9MSD | M43709.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |
| MC3903-9 | M43707.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-4

| CAS No. | Compound | MC3903-9 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 5.0 | U | 50 | 27.3 | 55* [a] | 25.7 | 51* [a] | 6 | 70-130/30 |
| 107-02-8 | Acrolein | 25 | U | 250 | 316 | 126 | 314 | 126 | 1 | 70-130/30 |
| 107-13-1 | Acrylonitrile | 5.0 | U | 50 | 147 | 294* [b] | 143 | 286* [b] | 3 | 70-130/30 |
| 71-43-2 | Benzene | 0.50 | U | 50 | 47.2 | 94 | 49.6 | 99 | 5 | 70-130/30 |
| 108-86-1 | Bromobenzene | 5.0 | U | 50 | 57.5 | 115 | 58.7 | 117 | 2 | 70-130/30 |
| 74-97-5 | Bromochloromethane | 5.0 | U | 50 | 51.6 | 103 | 51.9 | 104 | 1 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | 1.0 | U | 50 | 59.9 | 120 | 60.3 | 121 | 1 | 70-130/30 |
| 75-25-2 | Bromoform | 1.0 | U | 50 | 59.0 | 118 | 58.2 | 116 | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | 2.0 | U | 50 | 31.8 | 64* [a] | 33.6 | 67* [a] | 6 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | 5.0 | U | 50 | 43.5 | 87 | 45.2 | 90 | 4 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | 5.0 | U | 50 | 54.8 | 110 | 56.9 | 114 | 4 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | 5.0 | U | 50 | 55.9 | 112 | 57.7 | 115 | 3 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | 5.0 | U | 50 | 53.8 | 108 | 55.6 | 111 | 3 | 70-130/30 |
| 75-15-0 | Carbon disulfide | 5.0 | U | 50 | 31.7 | 63* [a] | 33.5 | 67* [a] | 6 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | 1.0 | U | 50 | 65.9 | 132* [a] | 68.4 | 137* [a] | 4 | 70-130/30 |
| 108-90-7 | Chlorobenzene | 1.0 | U | 50 | 60.1 | 120 | 61.1 | 122 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | 2.0 | U | 50 | 29.8 | 60* [a] | 31.7 | 63* [a] | 6 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 5.0 | U | 50 | ND | 0* [a] | ND | 0* [a] | nc | 70-130/30 |
| 67-66-3 | Chloroform | 1.0 | U | 50 | 50.5 | 101 | 51.3 | 103 | 2 | 70-130/30 |
| 74-87-3 | Chloromethane | 2.0 | U | 50 | 20.8 | 42* [a] | 22.2 | 44* [a] | 7 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | 5.0 | U | 50 | 49.4 | 99 | 51.2 | 102 | 4 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | 5.0 | U | 50 | 50.7 | 101 | 52.5 | 105 | 3 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 5.0 | U | 50 | 42.4 | 85 | 40.6 | 81 | 4 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | 1.0 | U | 50 | 66.5 | 133* [a] | 65.8 | 132* [a] | 1 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | 2.0 | U | 50 | 56.6 | 113 | 56.8 | 114 | 0 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | 1.0 | U | 50 | 57.6 | 115 | 58.4 | 117 | 1 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | 1.0 | U | 50 | 56.9 | 114 | 58.6 | 117 | 3 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | 1.0 | U | 50 | 54.3 | 109 | 56.1 | 112 | 3 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | 2.0 | U | 50 | 29.4 | 59* [a] | 30.9 | 62* [a] | 5 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | 1.0 | U | 50 | 42.3 | 85 | 43.9 | 88 | 4 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | 1.0 | U | 50 | 55.8 | 112 | 55.0 | 110 | 1 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | 1.0 | U | 50 | 41.9 | 84 | 44.0 | 88 | 5 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | 1.0 | U | 50 | 47.1 | 94 | 48.8 | 98 | 4 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | 1.0 | U | 50 | 45.9 | 92 | 48.4 | 97 | 5 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | 2.0 | U | 50 | 48.3 | 97 | 49.6 | 99 | 3 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | 5.0 | U | 50 | 50.6 | 101 | 50.1 | 100 | 1 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3903-9MS | M43708.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |
| MC3903-9MSD | M43709.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |
| MC3903-9 | M43707.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-4

| CAS No. | Compound | MC3903-9 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 5.0 | U | 50 | 58.7 | 117 | 60.7 | 121 | 3 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | 5.0 | U | 50 | 54.1 | 108 | 56.4 | 113 | 4 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | 0.50 | U | 50 | 49.2 | 98 | 50.8 | 102 | 3 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | 0.50 | U | 50 | 54.2 | 108 | 55.1 | 110 | 2 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | 25 | U | 250 | 157 | 63* [a] | 161 | 64* [a] | 3 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | 5.0 | U | 50 | 42.7 | 85 | 43.7 | 87 | 2 | 72-139/30 |
| 100-41-4 | Ethylbenzene | 1.0 | U | 50 | 59.3 | 119 | 61.3 | 123 | 3 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | 5.0 | U | 50 | 87.9 | 176* [b] | 89.2 | 178* [b] | 1 | 70-130/30 |
| 591-78-6 | 2-Hexanone | 5.0 | U | 50 | 37.9 | 76 | 37.0 | 74 | 2 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | 5.0 | U | 50 | 61.3 | 123 | 62.8 | 126 | 2 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | 5.0 | U | 50 | 58.6 | 117 | 59.8 | 120 | 2 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | 1.0 | U | 50 | 38.9 | 78 | 39.6 | 79 | 2 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 5.0 | U | 50 | 38.1 | 76 | 37.9 | 76 | 1 | 70-130/30 |
| 74-95-3 | Methylene bromide | 5.0 | U | 50 | 54.0 | 108 | 53.1 | 106 | 2 | 70-130/30 |
| 75-09-2 | Methylene chloride | 2.0 | U | 50 | 42.0 | 84 | 43.1 | 86 | 3 | 70-130/30 |
| 91-20-3 | Naphthalene | 5.0 | U | 50 | 48.5 | 97 | 47.4 | 95 | 2 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 5.0 | U | 50 | 51.3 | 103 | 52.9 | 106 | 3 | 70-130/30 |
| 100-42-5 | Styrene | 5.0 | U | 50 | 58.3 | 117 | 60.0 | 120 | 3 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 5.0 | U | 50 | 67.4 | 135* [a] | 68.4 | 137* [a] | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.0 | U | 50 | 39.3 | 79 | 39.0 | 78 | 1 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | 1.0 | U | 50 | 75.5 | 151* [b] | 77.4 | 155* [b] | 2 | 70-130/30 |
| 108-88-3 | Toluene | 1.0 | U | 50 | 57.6 | 115 | 59.1 | 118 | 3 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 5.0 | U | 50 | 61.5 | 123 | 61.2 | 122 | 0 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 5.0 | U | 50 | 66.7 | 133* [a] | 68.3 | 137* [a] | 2 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | 1.0 | U | 50 | 57.5 | 115 | 59.2 | 118 | 3 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | 1.0 | U | 50 | 53.1 | 106 | 52.9 | 106 | 0 | 70-130/30 |
| 79-01-6 | Trichloroethene | 1.0 | U | 50 | 58.0 | 116 | 59.8 | 120 | 3 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | 1.0 | U | 50 | 45.0 | 90 | 46.8 | 94 | 4 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | 5.0 | U | 50 | 38.8 | 78 | 38.0 | 76 | 2 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 5.0 | U | 50 | 51.7 | 103 | 52.9 | 106 | 2 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 5.0 | U | 50 | 51.8 | 104 | 52.9 | 106 | 2 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | 5.0 | U | 50 | 22.2 | 44* [a] | 22.2 | 44* [a] | 0 | 70-130/30 |
| 75-01-4 | Vinyl chloride | 1.0 | U | 50 | 23.1 | 46* [a] | 25.3 | 51* [a] | 9 | 70-130/30 |
| | m,p-Xylene | 1.0 | U | 100 | 126 | 126 | 130 | 130 | 3 | 70-130/30 |
| 95-47-6 | o-Xylene | 1.0 | U | 50 | 63.1 | 126 | 64.8 | 130 | 3 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 1.0 | U | 150 | 189 | 126 | 195 | 130 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3903-9MS | M43708.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |
| MC3903-9MSD | M43709.D | 1 | 10/0I/11 | JP | n/a | n/a | MSM1411 |
| MC3903-9 | M43707.D | 1 | 10/01/11 | JP | n/a | n/a | MSM141I |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3714-4

| CAS No. | Surrogate Recoveries | MS | MSD | MC3903-9 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | 83% | 85% | 70-130% |
| 2037-26-5 | Toluene-D8 | 93% | 95% | 94% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 85% | 87% | 84% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Volatile Internal Standard Area Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSK1837-CC1831 | Injection Date: | 09/23/11 |
| Lab File ID: | K54975.D | Injection Time: | 10:47 |
| Instrument ID: | GCMSK | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 292697 | 8.87 | 383319 | 9.72 | 190046 | 12.97 | 220399 | 15.53 | 98612 | 6.48 |
| Upper Limit [a] | 585394 | 9.37 | 766638 | 10.22 | 380092 | 13.47 | 440798 | 16.03 | 197224 | 6.98 |
| Lower Limit [b] | 146349 | 8.37 | 191660 | 9.22 | 95023 | 12.47 | 110200 | 15.03 | 49306 | 5.98 |

| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| MSK1837-BS | 292516 | 8.87 | 386732 | 9.72 | 186642 | 12.97 | 219562 | 15.53 | 88535 | 6.48 |
| MSK1837-BSD | 295457 | 8.87 | 392424 | 9.72 | 190550 | 12.97 | 225469 | 15.53 | 105300 | 6.49 |
| MSK1837-MB | 302180 | 8.87 | 408379 | 9.72 | 189687 | 12.98 | 210498 | 15.53 | 89642 | 6.48 |
| ZZZZZZ | 298132 | 8.86 | 406274 | 9.71 | 188199 | 12.97 | 219250 | 15.53 | 94615 | 6.50 |
| ZZZZZZ | 292081 | 8.87 | 401752 | 9.72 | 185694 | 12.97 | 208613 | 15.53 | 97734 | 6.48 |
| ZZZZZZ | 292444 | 8.86 | 396754 | 9.71 | 185908 | 12.97 | 212453 | 15.53 | 96285 | 6.50 |
| ZZZZZZ | 288224 | 8.87 | 393879 | 9.72 | 183672 | 12.98 | 204867 | 15.53 | 96566 | 6.48 |
| ZZZZZZ | 281470 | 8.87 | 385276 | 9.72 | 181743 | 12.98 | 199029 | 15.53 | 91397 | 6.48 |
| ZZZZZZ | 279576 | 8.87 | 381019 | 9.72 | 181402 | 12.98 | 199803 | 15.53 | 92327 | 6.48 |
| ZZZZZZ | 279923 | 8.87 | 384072 | 9.72 | 180037 | 12.98 | 198321 | 15.53 | 89371 | 6.48 |
| ZZZZZZ | 277174 | 8.87 | 384206 | 9.72 | 179676 | 12.97 | 200202 | 15.53 | 90948 | 6.48 |
| ZZZZZZ | 279618 | 8.87 | 381999 | 9.72 | 177795 | 12.97 | 200529 | 15.53 | 93145 | 6.48 |
| MC3779-7 | 275184 | 8.87 | 377340 | 9.72 | 178008 | 12.97 | 197929 | 15.53 | 92317 | 6.48 |
| MC3779-7MS | 273328 | 8.87 | 357566 | 9.72 | 177826 | 12.97 | 208351 | 15.53 | 103089 | 6.48 |
| MC3779-7MSD | 277827 | 8.86 | 365181 | 9.71 | 181406 | 12.97 | 211124 | 15.53 | 94631 | 6.48 |
| MC3714-3 | 290421 | 8.87 | 395798 | 9.72 | 180977 | 12.98 | 213891 | 15.53 | 93396 | 6.48 |
| MC3714-1 | 292935 | 8.87 | 395640 | 9.72 | 182451 | 12.98 | 213934 | 15.53 | 90860 | 6.48 |
| ZZZZZZ | 290873 | 8.87 | 387033 | 9.72 | 178159 | 12.98 | 213550 | 15.53 | 102355 | 6.48 |
| ZZZZZZ | 287752 | 8.87 | 387789 | 9.72 | 175023 | 12.97 | 210132 | 15.53 | 93319 | 6.48 |
| ZZZZZZ | 275933 | 8.87 | 392961 | 9.72 | 184982 | 12.97 | 210655 | 15.53 | 101842 | 6.48 |
| ZZZZZZ | 298029 | 8.87 | 402380 | 9.72 | 186224 | 12.97 | 215675 | 15.53 | 97692 | 6.48 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1411-CC1370 | Injection Date: | 10/01/11 |
| Lab File ID: | M43699.D | Injection Time: | 12:18 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 108349 | 9.19 | 150568 | 10.07 | 73541 | 13.34 | 102638 | 15.90 | 27244 | 6.74 |
| Upper Limit [a] | 216698 | 9.69 | 301136 | 10.57 | 147082 | 13.84 | 205276 | 16.40 | 54488 | 7.24 |
| Lower Limit [b] | 54175 | 8.69 | 75284 | 9.57 | 36771 | 12.84 | 51319 | 15.40 | 13622 | 6.24 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1411-BS | 112965 | 9.19 | 157244 | 10.07 | 74015 | 13.34 | 103657 | 15.90 | 24863 | 6.75 |
| MSM1411-MB | 104141 | 9.19 | 145368 | 10.07 | 68502 | 13.34 | 94213 | 15.90 | 27128 | 6.74 |
| ZZZZZZ | 101355 | 9.19 | 138324 | 10.07 | 63959 | 13.34 | 90068 | 15.90 | 25917 | 6.74 |
| MC3714-4 | 94792 | 9.19 | 129693 | 10.07 | 58615 | 13.34 | 83276 | 15.90 | 22561 | 6.74 |
| ZZZZZZ | 92971 | 9.19 | 125846 | 10.07 | 57430 | 13.34 | 81986 | 15.90 | 15224 | 6.74 |
| ZZZZZZ | 92912 | 9.19 | 125327 | 10.07 | 58400 | 13.34 | 83162 | 15.90 | 20466 | 6.74 |
| MC3903-9 | 86749 | 9.19 | 119046 | 10.07 | 56991 | 13.34 | 80182 | 15.90 | 16359 | 6.74 |
| MC3903-9MS | 96733 | 9.19 | 134810 | 10.07 | 64957 | 13.34 | 92701 | 15.90 | 20429 | 6.74 |
| MC3903-9MSD | 98212 | 9.19 | 135682 | 10.07 | 66195 | 13.34 | 95045 | 15.90 | 20225 | 6.74 |
| ZZZZZZ | 99384 | 9.19 | 136971 | 10.07 | 65999 | 13.34 | 91670 | 15.90 | 30264 | 6.74 |
| ZZZZZZ | 97324 | 9.19 | 136257 | 10.07 | 64038 | 13.34 | 90181 | 15.90 | 23360 | 6.74 |
| ZZZZZZ | 95057 | 9.19 | 130401 | 10.07 | 60434 | 13.34 | 85174 | 15.90 | 23148 | 6.74 |
| ZZZZZZ | 92886 | 9.19 | 127890 | 10.07 | 60862 | 13.34 | 85250 | 15.90 | 21977 | 6.74 |
| ZZZZZZ | 90238 | 9.19 | 123419 | 10.07 | 59366 | 13.34 | 82771 | 15.90 | 21614 | 6.74 |
| ZZZZZZ | 100465 | 9.19 | 136510 | 10.07 | 67149 | 13.34 | 99452 | 15.90 | 23588 | 6.75 |
| ZZZZZZ | 105635 | 9.19 | 146253 | 10.07 | 68776 | 13.34 | 96788 | 15.90 | 25795 | 6.74 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV93-CC67 | Injection Date: | 09/27/11 |
| Lab File ID: | V2117.D | Injection Time: | 08:24 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 382176 | 6.54 | 577011 | 7.72 | 304263 | 11.08 | 309226 | 13.31 | 114564 | 3.51 |
| Upper Limit [a] | 764352 | 7.04 | 1154022 | 8.22 | 608526 | 11.58 | 618452 | 13.81 | 229128 | 4.01 |
| Lower Limit [b] | 191088 | 6.04 | 288506 | 7.22 | 152132 | 10.58 | 154613 | 12.81 | 57282 | 3.01 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSV93-BS | 386248 | 6.53 | 582182 | 7.72 | 306946 | 11.08 | 310085 | 13.31 | 121956 | 3.51 |
| MSV93-MB | 366766 | 6.53 | 570512 | 7.72 | 307573 | 11.08 | 316187 | 13.31 | 179003 | 3.50 |
| ZZZZZZ | 379165 | 6.53 | 583490 | 7.72 | 324173 | 11.07 | 321761 | 13.31 | 154223 | 3.50 |
| ZZZZZZ | 408150 | 6.54 | 621283 | 7.72 | 389484 | 11.07 | 328323 | 13.31 | 172368 | 3.52 |
| ZZZZZZ | 390503 | 6.54 | 600499 | 7.72 | 326888 | 11.08 | 336997 | 13.31 | 161133 | 3.50 |
| ZZZZZZ | 400328 | 6.54 | 609421 | 7.72 | 323373 | 11.08 | 333963 | 13.31 | 160035 | 3.51 |
| MC3714-2 | 411549 | 6.53 | 619133 | 7.72 | 317698 | 11.08 | 264849 | 13.31 | 172752 | 3.52 |
| ZZZZZZ | 407282 | 6.53 | 641252 | 7.72 | 339217 | 11.08 | 340005 | 13.32 | 76721 | 3.79 |
| ZZZZZZ | 408895 | 6.54 | 638281 | 7.73 | 339575 | 11.08 | 340895 | 13.31 | 163280 | 3.51 |
| MC3751-4 | 381330 | 6.54 | 586351 | 7.72 | 314722 | 11.08 | 317386 | 13.31 | 168953 | 3.50 |
| ZZZZZZ | 375919 | 6.54 | 575912 | 7.72 | 311706 | 11.08 | 309440 | 13.31 | 169666 | 3.51 |
| ZZZZZZ | 364332 | 6.54 | 563000 | 7.72 | 290084 | 11.08 | 300080 | 13.31 | 102976 | 3.49 |
| ZZZZZZ | 380161 | 6.54 | 589035 | 7.73 | 320498 | 11.08 | 322674 | 13.31 | 166030 | 3.51 |
| MC3751-4MS | 394375 | 6.53 | 597344 | 7.72 | 318579 | 11.08 | 324283 | 13.31 | 175067 | 3.50 |
| MC3751-4MSD | 409918 | 6.53 | 627814 | 7.72 | 335314 | 11.08 | 342075 | 13.31 | 188954 | 3.50 |
| ZZZZZZ | 385525 | 6.53 | 589564 | 7.72 | 314630 | 11.08 | 324006 | 13.31 | 170885 | 3.50 |
| ZZZZZZ | 383427 | 6.53 | 589990 | 7.72 | 316894 | 11.07 | 322911 | 13.31 | 163560 | 3.49 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Surrogate Recovery Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3714-4 | M43704.D | 86.0 | 93.0 | 84.0 |
| MC3903-9MS | M43708.D | 82.0 | 93.0 | 85.0 |
| MC3903-9MSD | M43709.D | 83.0 | 95.0 | 87.0 |
| MSM1411-BS | M43700.D | 82.0 | 92.0 | 85.0 |
| MSM1411-MB | M43702.D | 85.0 | 94.0 | 86.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3714-1 | K54993.D | 107.0 | 103.0 | 107.0 |
| MC3714-2 | V2126.D | 88.0 | 99.0 | 109.0 |
| MC3714-3 | K54992.D | 112.0 | 104.0 | 111.0 |
| MC3751-4MS | V2134.D | 99.0 | 98.0 | 98.0 |
| MC3751-4MSD | V2135.D | 99.0 | 97.0 | 97.0 |
| MC3779-7MS | K54990.D | 103.0 | 106.0 | 103.0 |
| MC3779-7MSD | K54991.D | 105.0 | 110.0 | 105.0 |
| MSK1837-BS | K54976.D | 102.0 | 106.0 | 103.0 |
| MSK1837-BSD | K54977.D | 99.0 | 102.0 | 99.0 |
| MSK1837-MB | K54978.D | 107.0 | 105.0 | 111.0 |
| MSV93-BS | V2120.D | 100.0 | 99.0 | 99.0 |
| MSV93-MB | V2121.D | 101.0 | 97.0 | 95.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

New England ACCUTEST LABORATORIES

## GC Volatiles



## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1319-MB | BH24013.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3714-1, MC3714-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 3.6 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 79% | 36-148% |

# Method Blank Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1325-MB | BH24126.D | 1 | 09/26/11 | WS | n/a | n/a | GBH1325 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3714-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 0.95 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 85% | 36-148% |

# Blank Spike Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1319-BSP | BH24014.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3714-1, MC3714-2

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 16.7 | 84 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 92% | 36-148% |

# Blank Spike Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1325-BSP | BH24127.D | 1 | 09/26/11 | WS | n/a | n/a | GBH1325 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3714-3

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 20.4 | 102 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 96% | 36-148% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3644-1MS | BH24024.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |
| MC3644-1MSD | BH24025.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |
| MC3644-1 | BH24023.D | 1 | 09/21/11 | WS | n/a | n/a | GBH1319 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3714-1, MC3714-2

| CAS No. | Compound | MC3644-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 336 | | 50.3 | 459 | 245* [a] | 438 | 203* [a] | 5 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3644-1 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 91% | 88% | 90% | 36-148% |

(a) Outside control limits due to high level in sample relative to spike amount.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3836-3MS | BH24138.D | 1 | 09/26/11 | WS | n/a | n/a | GBH1325 |
| MC3836-3MSD | BH24139.D | 1 | 09/26/11 | WS | n/a | n/a | GBH1325 |
| MC3836-3 | BH24137.D | 1 | 09/26/11 | WS | n/a | n/a | GBH1325 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3714-3

| CAS No. | Compound | MC3836-3 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 48.6 | 44.4 | 91 | 42.7 | 88 | 4 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3836-3 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 107% | 93% | 95% | 36-148% |

# Volatile Surrogate Recovery Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3714-1 | BH24037.D | 84.0 |
| MC3714-2 | BH24038.D | 95.0 |
| MC3714-3 | BH24132.D | 100.0 |
| GBH1319-BSP | BH24014.D | 92.0 |
| GBH1319-MB | BH24013.D | 79.0 |
| GBH1325-BSP | BH24127.D | 96.0 |
| GBH1325-MB | BH24126.D | 85.0 |
| MC3644-1MS | BH24024.D | 91.0 |
| MC3644-1MSD | BH24025.D | 88.0 |
| MC3836-3MS | BH24138.D | 107.0 |
| MC3836-3MSD | BH24139.D | 93.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1318-CC1043 | Injection Date: | 09/21/11 |
| Lab File ID: | BH24012.D | Injection Time: | 05:03 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1319-MB | BH24013.D | 09/21/11 | 09:14 | 32.40 |
| GBH1319-BSP | BH24014.D | 09/21/11 | 09:54 | 32.39 |
| ZZZZZZ | BH24015.D | 09/21/11 | 10:34 | 32.39 |
| ZZZZZZ | BH24016.D | 09/21/11 | 11:14 | 32.40 |
| ZZZZZZ | BH24017.D | 09/21/11 | 11:55 | 32.39 |
| ZZZZZZ | BH24018.D | 09/21/11 | 12:35 | 32.39 |
| ZZZZZZ | BH24019.D | 09/21/11 | 13:15 | 32.39 |
| ZZZZZZ | BH24021.D | 09/21/11 | 14:35 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1319-CC1043 | Injection Date: | 09/21/11 |
| Lab File ID: | BH24012A.D | Injection Time: | 05:03 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1319-MB | BH24013.D | 09/21/11 | 09:14 | 32.40 |
| GBH1319-BSP | BH24014.D | 09/21/11 | 09:54 | 32.39 |
| ZZZZZZ | BH24015.D | 09/21/11 | 10:34 | 32.39 |
| ZZZZZZ | BH24016.D | 09/21/11 | 11:14 | 32.40 |
| ZZZZZZ | BH24017.D | 09/21/11 | 11:55 | 32.39 |
| ZZZZZZ | BH24018.D | 09/21/11 | 12:35 | 32.39 |
| ZZZZZZ | BH24019.D | 09/21/11 | 13:15 | 32.39 |
| ZZZZZZ | BH24021.D | 09/21/11 | 14:35 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1319-CC1043 | Injection Date: | 09/21/11 |
| Lab File ID: | BH24022.D | Injection Time: | 15:15 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3644-I | BH24023.D | 09/21/11 | 15:55 | 32.39 |
| MC3644-1MS | BH24024.D | 09/21/11 | 16:35 | 32.39 |
| MC3644-1MSD | BH24025.D | 09/21/11 | 17:15 | 32.39 |
| ZZZZZZ | BH24026.D | 09/21/11 | 17:55 | 32.39 |
| ZZZZZZ | BH24027.D | 09/21/11 | 18:36 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1319-CC1043 | Injection Date: | 09/21/11 |
| Lab File ID: | BH24028.D | Injection Time: | 19:16 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BH24029.D | 09/21/11 | 19:56 | 32.39 |
| ZZZZZZ | BH24030.D | 09/21/11 | 20:36 | 32.39 |
| ZZZZZZ | BH24031.D | 09/21/11 | 21:16 | 32.39 |
| ZZZZZZ | BH24032.D | 09/21/11 | 21:56 | 32.39 |
| ZZZZZZ | BH24033.D | 09/21/11 | 22:36 | 32.39 |
| ZZZZZZ | BH24034.D | 09/21/11 | 23:16 | 32.39 |
| ZZZZZZ | BH24035.D | 09/21/11 | 23:56 | 32.39 |
| ZZZZZZ | BH24036.D | 09/22/11 | 00:35 | 32.39 |
| MC3714-1 | BH24037.D | 09/22/11 | 01:15 | 32.39 |
| MC3714-2 | BH24038.D | 09/22/11 | 01:54 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1325-CC1043 | Injection Date: | 09/26/11 |
| Lab File ID: | BH24125.D | Injection Time: | 13:57 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1325-MB | BH24126.D | 09/26/11 | 14:37 | 32.40 |
| GBH1325-BSP | BH24127.D | 09/26/11 | 15:17 | 32.40 |
| ZZZZZZ | BH24128.D | 09/26/11 | 15:57 | 32.39 |
| ZZZZZZ | BH24129.D | 09/26/11 | 16:37 | 32.40 |
| ZZZZZZ | BH24130.D | 09/26/11 | 17:17 | 32.40 |
| ZZZZZZ | BH24131.D | 09/26/11 | 17:57 | 32.39 |
| MC3714-3 | BH24132.D | 09/26/11 | 18:37 | 32.39 |
| ZZZZZZ | BH24133.D | 09/26/11 | 19:17 | 32.40 |
| ZZZZZZ | BH24134.D | 09/26/11 | 19:58 | 32.40 |
| ZZZZZZ | BH24135.D | 09/26/11 | 20:38 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1325-CC1043 | Injection Date: | 09/26/11 |
| Lab File ID: | BH24136.D | Injection Time: | 21:18 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3836-3 | BH24137.D | 09/26/11 | 21:58 | 32.39 |
| MC3836-3MS | BH24138.D | 09/26/11 | 22:38 | 32.39 |
| MC3836-3MSD | BH24139.D | 09/26/11 | 23:18 | 32.39 |
| ZZZZZZ | BH24140.D | 09/26/11 | 23:58 | 32.39 |
| ZZZZZZ | BH24141.D | 09/27/11 | 00:38 | 32.40 |
| ZZZZZZ | BH24142.D | 09/27/11 | 01:18 | 32.39 |
| ZZZZZZ | BH24143.D | 09/27/11 | 01:57 | 32.39 |
| ZZZZZZ | BH24144.D | 09/27/11 | 02:37 | 32.39 |
| ZZZZZZ | BH24145.D | 09/27/11 | 03:17 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

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## GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26341-MB | BG31087.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3714-1, MC3714-2, MC3714-3



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 16 | 12 | mg/kg | |
| | TPH (> C28-C40) | ND | 16 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 43% | 24-147% |

# Blank Spike Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26341-BS | BG31088.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3714-1, MC3714-2, MC3714-3

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 160 | 121 | 76 | 63-139 |
| | TPH (> C28-C40) | 160 | 87.9 | 55 | 46-103 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 43% | 24-147% |

7.2.1

7

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26341-MS | BG31104.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |
| OP26341-MSD | BG31105.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |
| MC3693-1 | BG31107.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3714-1, MC3714-2, MC3714-3



| CAS No. | Compound | MC3693-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 1030 | | 178 | 1030 | 0* [a] | 1030 | 0* [a] | 0 | 8-154/127 |
| | TPH (>C28-C40) | ND | | 178 | 74.6 | 42 | 76.0 | 43 | 2 | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3693-1 | Limits |
|---|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 29% | 30% | 32% | 24-147% |

(a) Outside control limits due to high level in sample relative to spike amount.

# Semivolatile Surrogate Recovery Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3714-1 | BG31214.D | 47.0 |
| MC3714-1 | BG31115.D | 42.0 |
| MC3714-2 | BG31114.D | 37.0 |
| MC3714-3 | BG31096.D | 34.0 |
| OP26341-BS | BG31088.D | 43.0 |
| OP26341-MB | BG31087.D | 43.0 |
| OP26341-MS | BG31104.D | 29.0 |
| OP26341-MSD | BG31105.D | 30.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 1-Chlorooctadecane | 24-147% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/24/11 |
| Lab File ID: | BG31084.D | Injection Time: | 21:57 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31085.D | 09/24/11 | 22:43 | 14.98 |
| ZZZZZZ | BG31086.D | 09/24/11 | 23:30 | 14.98 |
| OP26341-MB | BG31087.D | 09/25/11 | 00:16 | 14.97 |
| OP26341-BS | BG31088.D | 09/25/11 | 01:03 | 14.97 |
| ZZZZZZ | BG31089.D | 09/25/11 | 01:49 | 14.97 |
| ZZZZZZ | BG31090.D | 09/25/11 | 02:35 | 14.96 |
| ZZZZZZ | BG31091.D | 09/25/11 | 03:22 | 14.96 |
| ZZZZZZ | BG31092.D | 09/25/11 | 04:08 | 14.97 |
| ZZZZZZ | BG31093.D | 09/25/11 | 04:54 | 14.98 |
| ZZZZZZ | BG31094.D | 09/25/11 | 05:41 | 14.98 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/25/11 |
| Lab File ID: | BG31095.D | Injection Time: | 06:27 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3714-3 | BG31096.D | 09/25/11 | 07:14 | 14.97 |
| ZZZZZZ | BG31097.D | 09/25/11 | 08:00 | 14.98 |
| ZZZZZZ | BG31098.D | 09/25/11 | 08:46 | 14.98 |
| OP26286-MS | BG31099.D | 09/25/11 | 09:32 | 14.99 |
| OP26286-MSD | BG31100.D | 09/25/11 | 10:19 | 14.98 |
| MC3644-1 | BG31101.D | 09/25/11 | 11:05 | 14.98 |
| ZZZZZZ | BG31102.D | 09/25/11 | 11:51 | 14.98 |
| ZZZZZZ | BG31103.D | 09/25/11 | 12:37 | 14.98 |
| OP26341-MS | BG31104.D | 09/25/11 | 13:24 | 14.98 |
| OP26341-MSD | BG31105.D | 09/25/11 | 14:10 | 14.98 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.2

7

# GC Surrogate Retention Time Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/25/11 |
| Lab File ID: | BG31106.D | Injection Time: | 14:56 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3693-1 | BG31107.D | 09/25/I1 | 15:42 | 14.98 |
| ZZZZZZ | BG31108.D | 09/25/11 | 16:28 | 14.98 |
| ZZZZZZ | BG31109.D | 09/25/11 | 17:14 | 14.98 |
| ZZZZZZ | BG31110.D | 09/25/11 | 18:01 | 14.99 |
| ZZZZZZ | BG31111.D | 09/25/11 | 18:47 | 14.98 |
| ZZZZZZ | BG31113.D | 09/25/11 | 20:19 | 14.96 |
| MC3714-2 | BG31114.D | 09/25/11 | 21:06 | 14.96 |
| MC3714-1 | BG31115.D | 09/25/11 | 21:52 | 14.97 |
| GBG1108-ECC110 | BG31116.D | 09/25/11 | 22:38 | 14.96 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.3

7

# GC Surrogate Retention Time Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1113-CC1103 | Injection Date: | 09/29/11 |
| Lab File ID: | BG31212.D | Injection Time: | 10:12 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.87 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31213.D | 09/29/11 | 11:02 | 14.88 |
| MC3714-1 | BG31214.D | 09/29/11 | 11:48 | 14.87 |
| GBG1113-ECC110 | BG31215.D | 09/29/11 | 12:34 | 14.87 |

Surrogate Compounds

SI = 1-Chlorooctadecane

(a) Retention time from GC signal #1

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## General Chemistry

## QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC3714
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC3714-1 Analyzed: 20-SEP-11 by MC Method: SM21 2540 B MOD.
ClientID: VMP35 (8-9)91911

| | | |
|---|---|---|
| Wet Weight (Total) | 41.129 | g |
| Tare Weight | 28.484 | g |
| Dry Weight (Total) | 39.045 | g |
| Solids, Percent | 83.5 | % |

Sample: MC3714-2 Analyzed: 20-SEP-11 by MC Method: SM21 2540 B MOD.
ClientID: SVE29 (1-2)91911

| | | |
|---|---|---|
| Wet Weight (Total) | 35.211 | g |
| Tare Weight | 20.58 | g |
| Dry Weight (Total) | 33.178 | g |
| Solids, Percent | 86.1 | % |

Sample: MC3714-3 Analyzed: 20-SEP-1I by MC Method: SM21 2540 B MOD.
ClientID: SVE11 (9-10')91911

| | | |
|---|---|---|
| Wet Weight (Total) | 39.296 | g |
| Tare Weight | 21.065 | g |
| Dry Weight (Total) | 36.638 | g |
| Solids, Percent | 85.4 | % |

# SVE Install 2011 Data Review

**Laboratory SDG: MC3751**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 1/3/2012**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| VMP-33 (30-31.5) 092011 | VMP-33 (20-22.5) 092011 |
| VMP-33 (10-12.5) 092011 | SVE-5 (15-17.5) 092011 |
| SVE-28 (32-34) 092011 | TB-092011 |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

*Yes,* the laboratory case narrative indicated VOC LCS recoveries were outside evaluation criteria. VOC MS/MSD recoveries were outside of evaluation criteria in sample SVE-5 (15-17.5) 092011. Professional judgment was used to qualify acetone in several samples. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 1.5° C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required. Additionally, the date format in sample IDs was amended to six digit format for consistency.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSV93-BS | VOCs | Acrolein | **374** | NA | 70-130 |
| MSV93-BS | VOCs | Acrylonitrile | **644** | NA | 70-130 |
| MSM1411-BS | VOCs | Acrolein | **46** | NA | 70-130 |
| MSM1411-BS | VOCs | Acrylonitrile | **288** | NA | 70-130 |
| MSM1411-BS | VOCs | 2-Chloroethyl vinyl ether | **38** | NA | 70-130 |
| MSM1411-BS | VOCs | 1,4-Dioxane | **64** | NA | 70-130 |
| MSM1411-BS | VOCs | Hexachlorobutadiene | **154** | NA | 70-130 |
| MSM1411-BS | VOCs | Tetrachloroethene | **143** | NA | 70-130 |
| MSM1411-BS | VOCs | Vinyl acetate | **54** | NA | 70-130 |

Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS MSM1411-BS was associated with trip blank sample TB-092011. Trip blank samples are quality control samples and are not qualified. No qualification of data was required.

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, although not requested, sample SVE-5 (15-17.5) 092011 was spiked and analyzed for VOCs.

*Were MS/MSD recoveries within evaluation criteria?*

No

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/RPD Criteria |
|---|---|---|---|---|---|
| SVE-5 (15-17.5) 092011 | VOCs | Acrolein | **287/267** | 3 | 70-130/30 |
| SVE-5 (15-17.5) 092011 | VOCs | Acrylonitrile | **545/559** | 7 | 70-130/30 |
| SVE-5 (15-17.5) 092011 | VOCs | 2-Butanone (MEK) | **141/152** | 12 | 70-130/30 |
| SVE-5 (15-17.5) 092011 | VOCs | 2-Chloroethyl vinyl ether | **0/0** | NA | 10-160/30 |
| SVE-5 (15-17.5) 092011 | VOCs | 1,2-Dibromo-3-chloropropane | 130/**136** | 9 | 70-130/30 |
| SVE-5 (15-17.5) 092011 | VOCs | 1,4-Dioxane | 129/**144** | 15 | 70-130/30 |
| SVE-5 (15-17.5) 092011 | VOCs | 2-Hexanone | **155/163** | 10 | 70-130/30 |

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/RPD Criteria |
|---|---|---|---|---|---|
| SVE-5 (15-17.5) 092011 | VOCs | 4-Methyl-2-pentanone (MIBK) | **163/169** | 8 | 70-130/30 |

USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone and LCS recoveries were within evaluation criteria with the exception of analytes previously addressed in Section 5.0 of this data review. No qualification of the data was required.

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

No

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

Yes, professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations greater than two times (2X) the reporting limit (RL), since acetone is not representative of site conditions. Additionally, USEPA Method 5035A states that acidification of certain soils with sodium bisulfate may produce a false positive acetone artifact of 100-200 ppb, or more. Acetone reported at concentrations less than 200 ppb (ug/kg) were qualified.

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| VMP-33 (30-31.5) 092011 | Acetone | 15.4 ug/kg | **U** | Professional Judgment |
| VMP-33 (10-12.5) 092011 | Acetone | 38.3 ug/kg | **U** | Professional Judgment |
| SVE-5 (15-17.5) 092011 | Acetone | 17.6 ug/kg | **U** | Professional Judgment |
| SVE-28 (32-34) 092011 | Acetone | 30.3 ug/kg | **U** | Professional Judgment |

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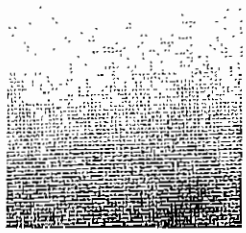
11/23/11





## Technical Report for

Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC3751

Sampling Date: 09/20/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **84**

Reviewed on 11/3/12

Reza Tand
Lab Director

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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# Sample Summary

Shell Oil

Job No: MC3751

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| MC3751-1 | 09/20/11 | 10:35 | LR | 09/21/11 | SO | Soil | VMP33 (30-31.5)92011 |
| MC3751-2 | 09/20/11 | 10:15 | LR | 09/21/11 | SO | Soil | VMP33 (20-22.5)92011 |
| MC3751-3 | 09/20/11 | 09:55 | LR | 09/21/11 | SO | Soil | VMP33 (10-12.5)92011 |
| MC3751-4 | 09/20/11 | 09:30 | LR | 09/21/11 | SO | Soil | SVE5 (15-17.5)92011 |
| MC3751-5 | 09/20/11 | 14:09 | LR | 09/21/11 | SO | Soil | SVE28 (32-34)92011 |
| MC3751-6 | 09/20/11 | 16:30 | LR | 09/21/11 | AQ | Trip Blank Water | TB092011 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

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2

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC3751 |
| **Site:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Ra | **Report Date** | 10/5/2011 12:48:06 PM |

5 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were collected on 09/20/2011 and were received at Accutest on 09/21/2011 properly preserved, at 1.5 Deg. C and intact. These Samples received an Accutest job number of MC3751. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSM1411

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3903-9MS, MC3903-9MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 1,4-Dioxane, 2-Chloroethyl vinyl ether, Acrolein, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for 1,1,1,2-Tetrachloroethane, 1,2,4-Trichlorobenzene, 1,4-Dioxane, 2-Chloroethyl vinyl ether, Acetone, Bromomethane, Carbon disulfide, Carbon tetrachloride, Chloroethane, Chloromethane, Dibromochloromethane, Dichlorodifluoromethane, Vinyl Acetate, Vinyl chloride are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSM1411-BS/MS/MSD for Acrylonitrile, Hexachlorobutadiene, Tetrachloroethene: Outside control limits. Associated samples are non-detect for this compound.

**Matrix** SO **Batch ID:** MSV93

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3751-4MS, MC3751-4MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,2-Dibromo-3-chloropropane, 1,4-Dioxane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSV93-BS/MS/MSD for Acrolein, Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

## Volatiles by GC By Method SW846 8015

**Matrix** SO **Batch ID:** GBH1324

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3731-12MS, MC3731-12MSD were used as the QC samples indicated.
- MS/MSD Recovery(s) for TPH-GRO (VOA) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

## Extractables by GC By Method SW846-8015

| Matrix SO | Batch ID: OP26341 |
|---|---|

- All samples were extraeted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3693-1MS, MC3693-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MS/MSD Recovery(s) for TPH (C10-C28) are outside control limits. Outside control limits due to high level in sample relative to spike amount.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN36218 |
|---|---|

- Sample(s) MC3762-9DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC3751).

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## Sample Results

Report of Analysis

# Report of Analysis



3.1

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP33 (30-31.5)92011 | | |
| Lab Sample ID: | MC3751-1 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8260B | Percent Solids: | 92.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2133.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.62 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~15.4~~ u ~~5.8~~ 15.4 | | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 29 | 20 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.8 | 2.3 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.58 | 0.15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.8 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.8 | 1.2 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.3 | 0.24 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.3 | 0.55 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.3 | 0.79 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.8 | 1.4 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.8 | 1.5 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.8 | 0.19 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.8 | 0.76 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.8 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.3 | 0.26 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.3 | 0.11 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.8 | 0.30 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.8 | 5.8 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.3 | 0.17 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.8 | 0.25 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.8 | 0.16 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.8 | 1.3 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.8 | 5.8 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.3 | 0.76 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.3 | 0.22 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.3 | 0.18 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.3 | 0.17 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.3 | 0.16 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.3 | 0.40 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.3 | 0.18 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.3 | 0.17 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.3 | 0.37 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP33 (30-31.5)92011 | | |
| Lab Sample ID: | MC3751-1 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8260B | Percent Solids: | 92.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.3 | 0.32 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.3 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.3 | 0.27 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.8 | 1.4 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.8 | 0.22 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.8 | 0.22 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.3 | 1.2 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.3 | 0.80 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 29 | 29 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.8 | 3.6 | ug/kg | |
| 100-41-4 | Ethylbenzene | 0.70 | 2.3 | 0.15 | ug/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 5.8 | 5.8 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.8 | 1.2 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.8 | 0.19 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.8 | 0.19 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.3 | 0.72 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.8 | 0.98 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.8 | 0.36 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.3 | 0.42 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.8 | 5.8 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.8 | 0.19 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.8 | 0.58 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.8 | 1.2 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.3 | 0.21 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.3 | 0.20 | ug/kg | |
| 108-88-3 | Toluene | 6.2 | 5.8 | 0.21 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.8 | 1.3 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.8 | 5.8 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.3 | 0.21 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.3 | 0.30 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.3 | 0.23 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.3 | 1.1 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.8 | 0.24 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.0 | 5.8 | 0.18 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.8 | 0.21 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.8 | 1.4 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.3 | 0.75 | ug/kg | |
| | m,p-Xylene | ND | 2.3 | 0.29 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.3 | 0.22 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.3 | 0.15 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP33 (30-31.5)92011 | | |
| Lab Sample ID: | MC3751-1 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8260B | Percent Solids: | 92.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 96% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP33 (30-31.5)92011 | | |
| Lab Sample ID: | MC3751-1 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8015 | Percent Solids: | 92.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24119.D | 1 | 09/25/11 | WS | n/a | n/a | GBH1324 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 1.35 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 40 | 7.7 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 92% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP33 (30-31.5)92011 | | |
| Lab Sample ID: | MC3751-1 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 92.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31089.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.4 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 18 | 13 | mg/kg | |
| | TPH (> C28-C40) | ND | 18 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 39% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP33 (20-22.5)92011 | | |
| Lab Sample ID: | MC3751-2 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8260B | Percent Solids: | 91.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2128.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.19 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.3 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 26 | 18 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.3 | 2.1 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.53 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.3 | 0.20 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.3 | 1.1 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.1 | 0.22 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.1 | 0.50 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.1 | 0.71 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.3 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.3 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.3 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.3 | 0.69 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.3 | 1.0 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.1 | 0.24 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.1 | 0.099 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.3 | 0.27 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.3 | 5.3 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.1 | 0.16 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.3 | 0.23 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.3 | 0.15 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.3 | 1.2 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.3 | 5.3 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.1 | 0.69 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.1 | 0.20 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.1 | 0.16 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.1 | 0.15 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.1 | 0.15 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.1 | 0.36 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.1 | 0.16 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.1 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.1 | 0.34 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP33 (20-22.5)92011 | | |
| Lab Sample ID: | MC3751-2 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8260B | Percent Solids: | 91.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.1 | 0.29 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.1 | 0.27 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.1 | 0.24 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.3 | 1.2 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.3 | 0.19 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.3 | 0.20 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.1 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.1 | 0.72 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 26 | 26 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.3 | 3.3 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.1 | 0.14 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.3 | 5.3 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.3 | 1.1 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.3 | 0.17 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.3 | 0.17 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.1 | 0.65 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.3 | 0.89 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.3 | 0.32 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.1 | 0.38 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.3 | 5.3 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.3 | 0.17 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.3 | 0.53 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.3 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.1 | 0.19 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.1 | 0.18 | ug/kg | |
| 108-88-3 | Toluene | 4.2 | 5.3 | 0.19 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.3 | 1.2 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.3 | 5.3 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.1 | 0.19 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.1 | 0.27 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.1 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.1 | 0.97 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.3 | 0.22 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.3 | 0.17 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.3 | 0.19 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.3 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.1 | 0.68 | ug/kg | |
| | m,p-Xylene | ND | 2.1 | 0.27 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.1 | 0.20 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.1 | 0.13 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP33 (20-22.5)92011 | | |
| Lab Sample ID: | MC3751-2 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8260B | Percent Solids: | 91.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 89% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 90% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 92% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP33 (20-22.5)92011 | | |
| Lab Sample ID: | MC3751-2 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8015 | Percent Solids: | 91.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24120.D | 1 | 09/25/11 | WS | n/a | n/a | GBH1324 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 1.22 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 46 | 8.7 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 91% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP33 (20-22.5)92011 | | |
| Lab Sample ID: | MC3751-2 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 91.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Bateh | Analytical Bateh |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31090.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.6 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 18 | 13 | mg/kg | |
| | TPH (> C28-C40) | ND | 18 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 29% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP33 (10-12.5)92011 | | |
| Lab Sample ID: | MC3751-3 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8260B | Percent Solids: | 80.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2129.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.80 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~38.3~~ u | ~~6.5~~ 38.3 | 1.5 | ug/kg | |
| 107-02-8 | Acrolein | ND | 33 | 22 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6.5 | 2.6 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.65 | 0.16 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 6.5 | 0.25 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6.5 | 1.3 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.6 | 0.27 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.6 | 0.61 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.6 | 0.88 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 6.5 | 1.5 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 6.5 | 1.6 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 6.5 | 0.22 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 6.5 | 0.85 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 6.5 | 1.3 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.6 | 0.29 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.6 | 0.12 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6.5 | 0.34 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6.5 | 6.5 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.6 | 0.19 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6.5 | 0.28 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 6.5 | 0.18 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6.5 | 1.5 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6.5 | 6.5 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.6 | 0.85 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.6 | 0.25 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.6 | 0.20 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.6 | 0.19 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.6 | 0.18 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.6 | 0.44 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.6 | 0.20 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.6 | 0.19 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.6 | 0.41 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calihration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP33 (10-12.5)92011 | | |
| Lab Sample ID: | MC3751-3 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8260B | Percent Solids: | 80.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.6 | 0.35 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.6 | 0.33 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.6 | 0.30 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6.5 | 1.5 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6.5 | 0.24 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6.5 | 0.25 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.6 | 1.3 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.6 | 0.89 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 33 | 33 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6.5 | 4.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | 1.1 | 2.6 | 0.17 | ug/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 6.5 | 6.5 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6.5 | 1.4 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 6.5 | 0.21 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 6.5 | 0.21 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.6 | 0.81 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6.5 | 1.1 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6.5 | 0.40 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.6 | 0.47 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 6.5 | 6.5 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 6.5 | 0.21 | ug/kg | |
| 100-42-5 | Styrene | ND | 6.5 | 0.65 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6.5 | 1.3 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.6 | 0.23 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.6 | 0.22 | ug/kg | |
| 108-88-3 | Toluene | 6.7 | 6.5 | 0.23 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6.5 | 1.4 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6.5 | 6.5 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.6 | 0.24 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.6 | 0.33 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.6 | 0.25 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.6 | 1.2 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6.5 | 0.27 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.0 | 6.5 | 0.20 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 6.5 | 0.24 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 6.5 | 1.5 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.6 | 0.84 | ug/kg | |
| | m,p-Xylene | ND | 2.6 | 0.33 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.6 | 0.24 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.6 | 0.16 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP33 (10-12.5)92011 | | |
| Lab Sample ID: | MC3751-3 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8260B | Percent Solids: | 80.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP33 (10-12.5)92011 | | |
| Lab Sample ID: | MC3751-3 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8015 | Percent Solids: | 80.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24121.D | 1 | 09/25/11 | WS | n/a | n/a | GBH1324 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 1.26 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 51 | 9.6 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 89% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP33 (10-12.5)92011 | | |
| **Lab Sample ID:** | MC3751-3 | **Date Sampled:** | 09/20/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/21/11 |
| **Method:** | SW846-8015 SW846 3546 | **Percent Solids:** | 80.0 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31113.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.9 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 20 | 15 | mg/kg | |
| | TPH (>C28-C40) | 15.2 | 20 | 15 | mg/kg | J |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 34% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE5 (15-17.5)92011 | | |
| Lab Sample ID: | MC3751-4 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8260B | Percent Solids: | 91.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2130.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.51 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~17.6 u~~ | ~~6.1~~ 17.6 | 1.4 | ug/kg | |
| 107-02-8 | Acrolein | ND | 30 | 21 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6.1 | 2.4 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.61 | 0.15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 6.1 | 0.23 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6.1 | 1.3 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.4 | 0.26 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.4 | 0.57 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.4 | 0.82 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 6.1 | 1.4 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 6.1 | 1.5 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 6.1 | 0.20 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 6.1 | 0.80 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 6.1 | 1.2 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.4 | 0.27 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.4 | 0.11 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6.1 | 0.32 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6.1 | 6.1 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.4 | 0.18 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6.1 | 0.26 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 6.1 | 0.17 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6.1 | 1.4 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6.1 | 6.1 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.4 | 0.79 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.4 | 0.23 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.4 | 0.18 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.4 | 0.18 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.4 | 0.17 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.4 | 0.42 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.4 | 0.19 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.4 | 0.18 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.4 | 0.39 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE5 (15-17.5)92011 | | |
| Lab Sample ID: | MC3751-4 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8260B | Percent Solids: | 91.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.4 | 0.33 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.4 | 0.31 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.4 | 0.28 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6.1 | 1.4 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6.1 | 0.22 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6.1 | 0.23 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.4 | 1.2 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.4 | 0.83 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 30 | 30 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6.1 | 3.8 | ug/kg | |
| 100-41-4 | Ethylbenzene | 2.9 | 2.4 | 0.16 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 6.1 | 6.1 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6.1 | 1.3 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 6.1 | 0.19 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 6.1 | 0.20 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.4 | 0.75 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6.1 | 1.0 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6.1 | 0.37 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.4 | 0.44 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 6.1 | 6.1 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 0.77 | 6.1 | 0.20 | ug/kg | J |
| 100-42-5 | Styrene | ND | 6.1 | 0.61 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6.1 | 1.2 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.4 | 0.21 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.4 | 0.21 | ug/kg | |
| 108-88-3 | Toluene | 7.7 | 6.1 | 0.22 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6.1 | 1.3 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6.1 | 6.1 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.4 | 0.22 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.4 | 0.31 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.4 | 0.24 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.4 | 1.1 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6.1 | 0.26 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 0.88 | 6.1 | 0.19 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 6.1 | 0.22 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 6.1 | 1.4 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.4 | 0.78 | ug/kg | |
| | m,p-Xylene | ND | 2.4 | 0.31 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.4 | 0.22 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.4 | 0.15 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE5 (15-17.5)92011 | | |
| Lab Sample ID: | MC3751-4 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8260B | Percent Solids: | 91.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 92% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.4

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE5 (15-17.5)92011 | | |
| Lab Sample ID: | MC3751-4 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8015 | Percent Solids: | 91.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24122.D | 1 | 09/25/11 | WS | n/a | n/a | GBH1324 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 1.74 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 32 | 6.1 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 90% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a componnd

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE5 (15-17.5)92011 | | |
| Lab Sample ID: | MC3751-4 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 91.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31091.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.4 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 18 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 18 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 30% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.5

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE28 (32-34)92011 | | |
| Lab Sample ID: | MC3751-5 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8260B | Percent Solids: | 91.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2131.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.05 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~30.3~~ u | ~~5.4~~ 30.3 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 27 | 18 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.4 | 2.2 | ug/kg | |
| 71-43-2 | Benzene | 0.35 | 0.54 | 0.13 | ug/kg | J |
| 108-86-1 | Bromobenzene | ND | 5.4 | 0.21 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.4 | 1.1 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.2 | 0.23 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.2 | 0.51 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.2 | 0.73 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.4 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.4 | 1.4 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.4 | 0.18 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.4 | 0.70 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.4 | 1.0 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.2 | 0.24 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.2 | 0.10 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.4 | 0.28 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.4 | 5.4 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.2 | 0.16 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.4 | 0.23 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.4 | 0.15 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.4 | 1.2 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.4 | 5.4 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.2 | 0.70 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.2 | 0.21 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.2 | 0.15 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.2 | 0.37 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.2 | 0.16 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.2 | 0.16 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.2 | 0.34 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE28 (32-34)92011 | | |
| Lab Sample ID: | MC3751-5 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8260B | Percent Solids: | 91.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.2 | 0.29 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.2 | 0.27 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.2 | 0.25 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.4 | 1.2 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.4 | 0.20 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.4 | 0.21 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.2 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.2 | 0.74 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 27 | 27 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.4 | 3.4 | ug/kg | |
| 100-41-4 | Ethylbenzene | 1.1 | 2.2 | 0.14 | ug/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 5.4 | 5.4 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.4 | 1.1 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.4 | 0.17 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.4 | 0.17 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.2 | 0.67 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.4 | 0.91 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.4 | 0.33 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.2 | 0.39 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.4 | 5.4 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 0.64 | 5.4 | 0.17 | ug/kg | J |
| 100-42-5 | Styrene | ND | 5.4 | 0.54 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.4 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.2 | 0.19 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.2 | 0.18 | ug/kg | |
| 108-88-3 | Toluene | 6.1 | 5.4 | 0.19 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.4 | 1.2 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.4 | 5.4 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.2 | 0.27 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.2 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.2 | 0.99 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.4 | 0.23 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.2 | 5.4 | 0.17 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 0.58 | 5.4 | 0.20 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 5.4 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.2 | 0.69 | ug/kg | |
| | m,p-Xylene | ND | 2.2 | 0.27 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.2 | 0.20 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.2 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE28 (32-34)92011 | | |
| Lab Sample ID: | MC3751-5 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8260B | Percent Solids: | 91.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE28 (32-34)92011 | | |
| Lab Sample ID: | MC3751-5 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846 8015 | Percent Solids: | 91.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24123.D | 1 | 09/25/11 | WS | n/a | n/a | GBH1324 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.55 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 12 | 2.4 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 90% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE28 (32-34)92011 | | |
| Lab Sample ID: | MC3751-5 | Date Sampled: | 09/20/11 |
| Matrix: | SO - Soil | Date Received: | 09/21/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 91.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31092.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.4 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 18 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 18 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 32% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB092011 | | |
| Lab Sample ID: | MC3751-6 | Date Sampled: | 09/20/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/21/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M43705.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB092011 | | |
| Lab Sample ID: | MC3751-6 | Date Sampled: | 09/20/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/21/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB092011 | | |
| Lab Sample ID: | MC3751-6 | Date Sampled: | 09/20/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/21/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 83% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 92% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 82% | | 70-130% |

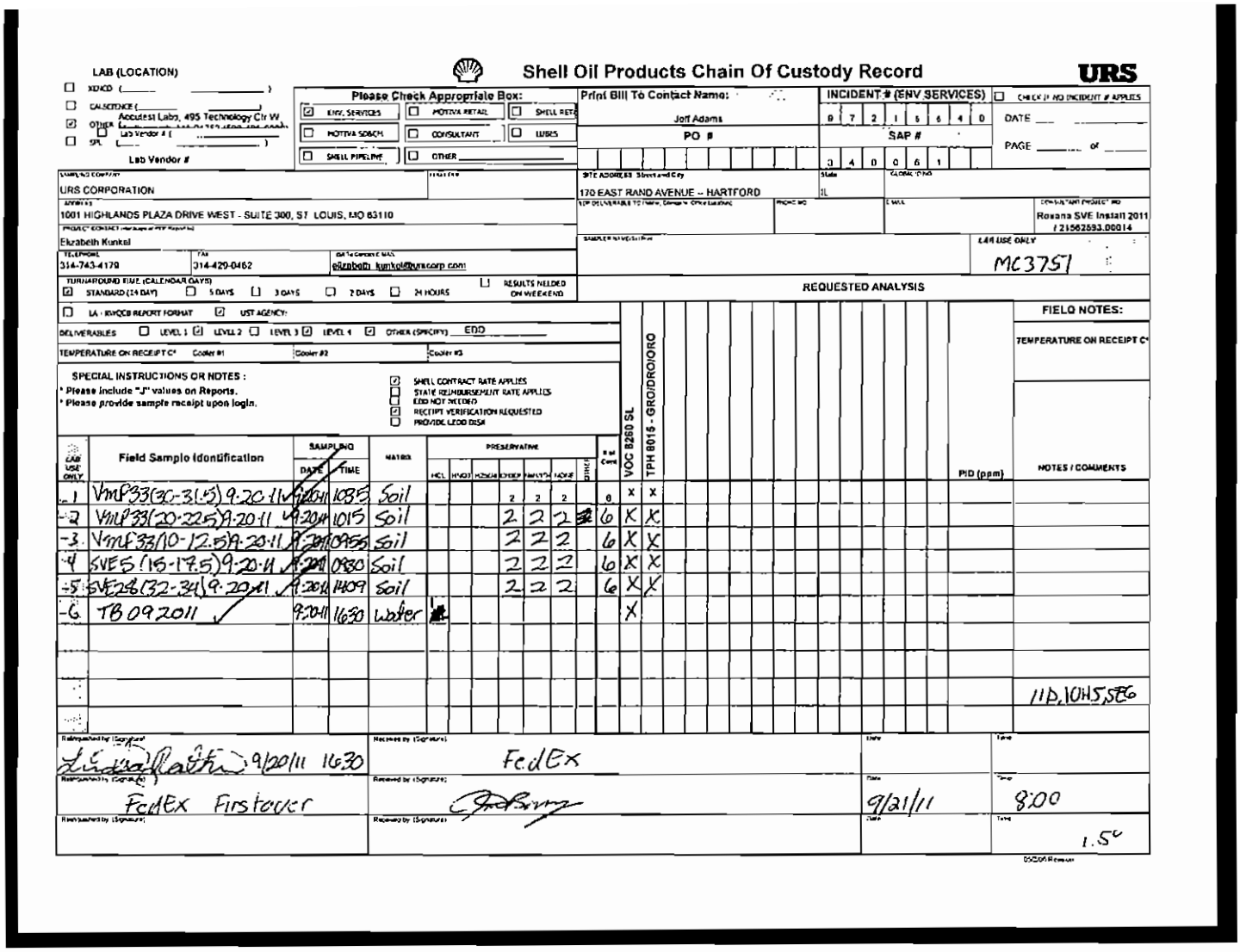
ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



**Shell Oil Products Chain Of Custody Record** — URS

LAB (LOCATION): ☐ XDCD ( ) ☐ CALSCIENCE ( ) ☑ Other Accutest Labs, 495 Technology Ctr W ☐ Lab Vendor # ( ) ☐ SPL ( ) — Lab Vendor #

Please Check Appropriate Box: ☑ ENV. SERVICES ☐ MOTIVA RETAIL ☐ SHELL RETAIL ☐ MOTIVA SOECH ☐ CONSULTANT ☐ URS ☐ SHELL PIPELINE ☐ OTHER

Print Bill To Contact Name: Jeff Adams

PO #

INCIDENT # (ENV SERVICES): 0 7 2 1 5 6 4 0 ☐ CHECK IF NO INCIDENT # APPLIES

SAP #: 3 4 0 0 6 1

DATE ___ PAGE ___ of ___

SAMPLING COMPANY: URS CORPORATION

SITE ADDRESS Street and City: 170 EAST RAND AVENUE – HARTFORD; State: IL

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST LOUIS, MO 63110

CONSULTANT PROJECT NO: Roxana SVE Install 2011 / 21562593.00014

PROJECT CONTACT: Elizabeth Kunkel

TELEPHONE: 314-743-4179; FAX: 314-429-0462; E-MAIL TO CONTACT: elizabeth.kunkel@urscorp.com

LAB USE ONLY: MC3751

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

REQUESTED ANALYSIS

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY:

DELIVERABLES ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C° Cooler #1 Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
* Please include "J" values on Reports.
* Please provide sample receipt upon login.

☑ SHELL CONTRACT RATE APPLIES ☐ STATE REIMBURSEMENT RATE APPLIES ☐ EDD NOT NEEDED ☑ RECEIPT VERIFICATION REQUESTED ☐ PROVIDE EDD DISK

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE: HCL | HNO3 | H2SO4 | OTHER | NAOH/ZN | NONE | OTHER | # of Cont. | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | VMP33(30-32.5)9.20.11 | 9/20/11 | 1085 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -2 | VMP33(20-22.5)9.20.11 | 9/20/11 | 1015 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -3 | VMP33(10-12.5)9.20.11 | 9/20/11 | 0955 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -4 | SVE5(15-17.5)9.20.11 | 9/20/11 | 0830 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -5 | SVE28(32-34)9.20.11 | 9/20/11 | 1409 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -6 | TB092011 | 9/20/11 | 1630 | Water | | | | | | | | | X | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | 11D,10H5,5E6 |
| | | | | | | | | | | | | | | | | |

FIELD NOTES: TEMPERATURE ON RECEIPT C°

| Relinquished by (Signature) | Date | Time | Received by (Signature) | Date | Time |
|---|---|---|---|---|---|
| Linda Rathe | 9/20/11 | 1630 | FedEx | | |
| FedEx Firstover | | | | 9/21/11 | 8:00 |
| | | | | | 1.5° |

05/2006 Revision



**MC3751: Chain of Custody**
**Page 1 of 1**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3751

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3751-1 | Collected: 20-SEP-11 10:35 By: LR | | Received: 21-SEP-11 By: JB | | | |
| VMP33 (30-31.5)92011 | | | | | | |
| MC3751-1 | SM21 2540 B MOD. | 22-SEP-11 | HS | | | %SOL |
| MC3751-1 | SW846 8015 | 25-SEP-11 01:08 | WS | | | V8015GRO |
| MC3751-1 | SW846-8015 | 25-SEP-11 01:49 | KD | 22-SEP-11 | AF | B8015DROORO |
| MC3751-1 | SW846 8260B | 27-SEP-11 17:50 | AMY | | | V8260SL |
| MC3751-2 | Collected: 20-SEP-11 10:15 By: LR | | Received: 21-SEP-11 By: JB | | | |
| VMP33 (20-22.5)92011 | | | | | | |
| MC3751-2 | SM21 2540 B MOD. | 22-SEP-11 | HS | | | %SOL |
| MC3751-2 | SW846 8015 | 25-SEP-11 01:48 | WS | | | V8015GRO |
| MC3751-2 | SW846-8015 | 25-SEP-11 02:35 | KD | 22-SEP-11 | AF | B8015DROORO |
| MC3751-2 | SW846 8260B | 27-SEP-11 15:19 | AMY | | | V8260SL |
| MC3751-3 | Collected: 20-SEP-11 09:55 By: LR | | Received: 21-SEP-11 By: JB | | | |
| VMP33 (10-12.5)92011 | | | | | | |
| MC3751-3 | SM21 2540 B MOD. | 22-SEP-11 | HS | | | %SOL |
| MC3751-3 | SW846 8015 | 25-SEP-11 02:29 | WS | | | V8015GRO |
| MC3751-3 | SW846-8015 | 25-SEP-11 20:19 | KD | 22-SEP-11 | AF | B8015DROORO |
| MC3751-3 | SW846 8260B | 27-SEP-11 15:49 | AMY | | | V8260SL |
| MC3751-4 | Collected: 20-SEP-11 09:30 By: LR | | Received: 21-SEP-11 By: JB | | | |
| SVE5 (15-17.5)92011 | | | | | | |
| MC3751-4 | SM21 2540 B MOD. | 22-SEP-11 | HS | | | %SOL |
| MC3751-4 | SW846 8015 | 25-SEP-11 03:09 | WS | | | V8015GRO |
| MC3751-4 | SW846-8015 | 25-SEP-11 03:22 | KD | 22-SEP-11 | AF | B8015DROORO |
| MC3751-4 | SW846 8260B | 27-SEP-11 16:19 | AMY | | | V8260SL |
| MC3751-5 | Collected: 20-SEP-11 14:09 By: LR | | Received: 21-SEP-11 By: JB | | | |
| SVE28 (32-34)92011 | | | | | | |
| MC3751-5 | SM21 2540 B MOD. | 22-SEP-11 | HS | | | %SOL |
| MC3751-5 | SW846 8015 | 25-SEP-11 03:49 | WS | | | V8015GRO |
| MC3751-5 | SW846-8015 | 25-SEP-11 04:08 | KD | 22-SEP-11 | AF | B8015DROORO |
| MC3751-5 | SW846 8260B | 27-SEP-11 16:49 | AMY | | | V8260SL |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3751

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3751-6 TB092011 | Collected: 20-SEP-11 16:30 By: LR | | | Received: 21-SEP-11 By: JB | | |
| MC3751-6 | SW846 8260B | 01-OCT-11 15:25 | JP | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/21/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3751-1.1 | Walk In Ref #9 | Hamid Siamak | 09/22/11 10:33 | Retrieve from Storage |
| MC3751-1.1 | Hamid Siamak | Walk In Ref #9 | 09/22/11 11:50 | Return to Storage |
| MC3751-1.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-1.2 | Walk In Ref #9 | Bijan Jafari | 09/22/11 16:34 | Retrieve from Storage |
| MC3751-1.2 | Bijan Jafari | Walk In Ref #9 | 09/22/11 16:37 | Return to Storage |
| MC3751-1.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-1.3 | VOC Ref #10 | Amy Min Yang | 09/26/11 17:35 | Retrieve from Storage |
| MC3751-1.3 | Amy Min Yang | GCMSV | 09/26/11 17:35 | Load on Instrument |
| MC3751-1.3 | GCMSV | Amy Min Yang | 09/27/11 07:45 | Unload from Instrument |
| MC3751-1.3 | Amy Min Yang | VOC Ref #10 | 09/27/11 07:45 | Return to Storage |
| MC3751-1.3 | VOC Ref #10 | Amy Min Yang | 09/27/11 16:12 | Retrieve from Storage |
| MC3751-1.3 | Amy Min Yang | GCMSV | 09/27/11 16:12 | Load on Instrument |
| MC3751-1.3 | GCMSV | Amy Min Yang | 10/04/11 17:33 | Unload from Instrument |
| MC3751-1.3 | Amy Min Yang | VOC Ref #10 | 10/04/11 17:33 | Return to Storage |
| MC3751-1.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-1.4 | VOC Ref #10 | Amy Min Yang | 09/27/11 10:04 | Retrieve from Storage |
| MC3751-1.4 | Amy Min Yang | GCMSV | 09/27/11 10:04 | Load on Instrument |
| MC3751-1.4 | GCMSV | Amy Min Yang | 10/04/11 17:33 | Unload from Instrument |
| MC3751-1.4 | Amy Min Yang | VOC Ref #10 | 10/04/11 17:33 | Return to Storage |
| MC3751-1.4 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-1.5 | VOC Ref #10 | Gary Krasinski | 09/21/11 14:42 | Retrieve from Storage |
| MC3751-1.5 | Gary Krasinski | VOC Ref #10 | 09/22/11 11:43 | Return to Storage |
| MC3751-1.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-2.1 | Walk In Ref #9 | Hamid Siamak | 09/22/11 10:33 | Retrieve from Storage |
| MC3751-2.1 | Hamid Siamak | Walk In Ref #9 | 09/22/11 11:50 | Return to Storage |
| MC3751-2.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-2.2 | Walk In Ref #9 | Bijan Jafari | 09/22/11 16:34 | Retrieve from Storage |
| MC3751-2.2 | Bijan Jafari | Walk In Ref #9 | 09/22/11 16:37 | Return to Storage |
| MC3751-2.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-2.3 | VOC Ref #10 | Amy Min Yang | 09/26/11 17:35 | Retrieve from Storage |
| MC3751-2.3 | Amy Min Yang | GCMSV | 09/26/11 17:35 | Load on Instrument |
| MC3751-2.3 | GCMSV | Amy Min Yang | 09/27/11 07:45 | Unload from Instrument |
| MC3751-2.3 | Amy Min Yang | VOC Ref #10 | 09/27/11 07:45 | Return to Storage |
| MC3751-2.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-2.4 | VOC Ref #10 | Amy Min Yang | 09/27/11 10:04 | Retrieve from Storage |
| MC3751-2.4 | Amy Min Yang | GCMSV | 09/27/11 10:04 | Load on Instrument |

# Accutest Internal Chain of Custody

Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/21/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3751-2.4 | GCMSV | Amy Min Yang | 10/04/11 17:33 | Unload from Instrument |
| MC3751-2.4 | Amy Min Yang | VOC Ref #10 | 10/04/11 17:33 | Return to Storage |
| MC3751-2.4 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-2.6 | VOC Ref #10 | Gary Krasinski | 09/21/11 14:42 | Retrieve from Storage |
| MC3751-2.6 | Gary Krasinski | VOC Ref #10 | 09/22/11 11:43 | Return to Storage |
| MC3751-2.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-3.1 | Walk In Ref #9 | Hamid Siamak | 09/22/11 10:33 | Retrieve from Storage |
| MC3751-3.1 | Hamid Siamak | Walk In Ref #9 | 09/22/11 11:50 | Return to Storage |
| MC3751-3.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-3.2 | Walk In Ref #9 | Bijan Jafari | 09/22/11 16:34 | Retrieve from Storage |
| MC3751-3.2 | Bijan Jafari | Walk In Ref #9 | 09/22/11 16:37 | Return to Storage |
| MC3751-3.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-3.3 | VOC Ref #10 | Amy Min Yang | 09/27/11 11:05 | Retrieve from Storage |
| MC3751-3.3 | Amy Min Yang | GCMSV | 09/27/11 11:06 | Load on Instrument |
| MC3751-3.3 | GCMSV | Amy Min Yang | 10/04/11 17:33 | Unload from Instrument |
| MC3751-3.3 | Amy Min Yang | VOC Ref #10 | 10/04/11 17:33 | Return to Storage |
| MC3751-3.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-3.5 | VOC Ref #10 | Gary Krasinski | 09/21/11 14:42 | Retrieve from Storage |
| MC3751-3.5 | Gary Krasinski | VOC Ref #10 | 09/22/11 11:43 | Return to Storage |
| MC3751-3.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-4.1 | Walk In Ref #9 | Hamid Siamak | 09/22/11 10:33 | Retrieve from Storage |
| MC3751-4.1 | Hamid Siamak | Walk In Ref #9 | 09/22/11 11:50 | Return to Storage |
| MC3751-4.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-4.2 | Walk In Ref #9 | Bijan Jafari | 09/22/11 16:34 | Retrieve from Storage |
| MC3751-4.2 | Bijan Jafari | Walk In Ref #9 | 09/22/11 16:37 | Return to Storage |
| MC3751-4.2 | Walk In Ref #9 | Amy Min Yang | 09/27/11 17:09 | Retrieve from Storage |
| MC3751-4.2 | Amy Min Yang | Walk In Ref #9 | 09/27/11 17:10 | Return to Storage |
| MC3751-4.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-4.3 | VOC Ref #10 | Amy Min Yang | 09/27/11 11:05 | Retrieve from Storage |
| MC3751-4.3 | Amy Min Yang | GCMSV | 09/27/11 11:06 | Load on Instrument |
| MC3751-4.3 | GCMSV | Amy Min Yang | 10/04/11 17:33 | Unload from Instrument |
| MC3751-4.3 | Amy Min Yang | VOC Ref #10 | 10/04/11 17:33 | Return to Storage |
| MC3751-4.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-4.6 | VOC Ref #10 | Gary Krasinski | 09/21/11 14:42 | Retrieve from Storage |
| MC3751-4.6 | Gary Krasinski | VOC Ref #10 | 09/22/11 11:43 | Return to Storage |

# Accutest Internal Chain of Custody



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/21/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3751-4.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-5.1 | Walk In Ref #9 | Hamid Siamak | 09/22/11 10:33 | Retrieve from Storage |
| MC3751-5.1 | Hamid Siamak | Walk In Ref #9 | 09/22/11 11:50 | Return to Storage |
| MC3751-5.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-5.2 | Walk In Ref #9 | Bijan Jafari | 09/22/11 16:34 | Retrieve from Storage |
| MC3751-5.2 | Bijan Jafari | Walk In Ref #9 | 09/22/11 16:37 | Return to Storage |
| MC3751-5.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-5.3 | VOC Ref #10 | Amy Min Yang | 09/27/11 10:04 | Retrieve from Storage |
| MC3751-5.3 | Amy Min Yang | GCMSV | 09/27/11 10:04 | Load on Instrument |
| MC3751-5.3 | GCMSV | Amy Min Yang | 10/04/11 17:33 | Unload from Instrument |
| MC3751-5.3 | Amy Min Yang | VOC Ref #10 | 10/04/11 17:33 | Return to Storage |
| MC3751-5.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-5.5 | VOC Ref #10 | Gary Krasinski | 09/21/11 14:42 | Retrieve from Storage |
| MC3751-5.5 | Gary Krasinski | VOC Ref #10 | 09/22/11 11:43 | Return to Storage |
| MC3751-5.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3751-6.1 | VOC Ref #5 | Dana Tyron | 10/01/11 13:51 | Retrieve from Storage |
| MC3751-6.1 | Dana Tyron | GCMSM | 10/01/11 13:51 | Load on Instrument |
| MC3751-6.1 | GCMSM | Dana Tyron | 10/03/11 10:11 | Unload from Instrument |
| MC3751-6.1 | Dana Tyron | VOC Ref #5 | 10/03/11 10:12 | Return to Storage |
| MC3751-6.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |

New England ACCUTEST LABORATORIES



## GC/MS Volatiles

# QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-MB | V2121.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3751-1, MC3751-2, MC3751-3, MC3751-4, MC3751-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary

Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-MB | V2121.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3751-1, MC3751-2, MC3751-3, MC3751-4, MC3751-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary

Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-MB | V2121.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3751-1, MC3751-2, MC3751-3, MC3751-4, MC3751-5

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

# Method Blank Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1411-MB | M43702.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3751-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-I | Acetone | ND | 5.0 | 4.I | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |

# Method Blank Summary

Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1411-MB | M43702.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3751-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

# Method Blank Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1411-MB | M43702.D | 1 | 10/01/11 | JP | n/a | n/a | MSM14II |



The QC reported here applies to the following samples: Method: SW846 8260B

MC375I-6

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | 70-130% |
| 2037-26-5 | Toluene-D8 | 94% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 86% | 70-130% |

# Blank Spike Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-BS | V2120.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3751-1, MC3751-2, MC3751-3, MC3751-4, MC3751-5

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 51.7 | 103 | 70-130 |
| 107-02-8 | Acrolein | 250 | 935 | 374* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 322 | 644* a | 70-130 |
| 71-43-2 | Benzene | 50 | 55.4 | 111 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 50.4 | 101 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 51.6 | 103 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 52.2 | 104 | 70-130 |
| 75-25-2 | Bromoform | 50 | 47.5 | 95 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 49.5 | 99 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 57.9 | 116 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 61.2 | 122 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 55.1 | 110 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 52.8 | 106 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 48.6 | 97 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 49.1 | 98 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 57.5 | 115 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 56.9 | 114 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 19.1 | 38 | 10-160 |
| 67-66-3 | Chloroform | 50 | 53.5 | 107 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 48.2 | 96 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 51.5 | 103 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 53.0 | 106 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 48.9 | 98 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 51.6 | 103 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 53.0 | 106 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 56.4 | 113 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 52.7 | 105 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 51.9 | 104 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 51.2 | 102 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 57.1 | 114 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 53.2 | 106 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 55.1 | 110 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 52.2 | 104 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 52.6 | 105 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 54.0 | 108 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 52.4 | 105 | 70-130 |

# Blank Spike Summary

Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-BS | V2120.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3751-1, MC3751-2, MC3751-3, MC3751-4, MC3751-5

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 55.4 | 111 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 52.1 | 104 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 54.3 | 109 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 57.4 | 115 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 254 | 102 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 55.6 | 111 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 57.4 | 115 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 54.6 | 109 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 60.5 | 121 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 62.6 | 125 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 57.6 | 115 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 52.5 | 105 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 61.1 | 122 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 53.6 | 107 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 58.8 | 118 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 57.3 | 115 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 54.5 | 109 | 70-130 |
| 100-42-5 | Styrene | 50 | 56.6 | 113 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 53.8 | 108 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 55.9 | 112 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 52.5 | 105 | 70-130 |
| 108-88-3 | Toluene | 50 | 52.0 | 104 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 55.7 | 111 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 58.6 | 117 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 49.8 | 100 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 52.3 | 105 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 50.7 | 101 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 45.6 | 91 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 54.8 | 110 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 52.6 | 105 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 52.8 | 106 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 44.3 | 89 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 41.9 | 84 | 70-130 |
| | m,p-Xylene | 100 | 116 | 116 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 56.4 | 113 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 173 | 115 | 70-130 |

# Blank Spike Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV93-BS | V2120.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3751-1, MC3751-2, MC3751-3, MC3751-4, MC3751-5

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1411-BS | M43700.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3751-6

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 40.9 | 82 | 70-130 |
| 107-02-8 | Acrolein | 250 | 115 | 46* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 144 | 288* b | 70-130 |
| 71-43-2 | Benzene | 50 | 48.3 | 97 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 54.9 | 110 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 50.7 | 101 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 54.9 | 110 | 70-130 |
| 75-25-2 | Bromoform | 50 | 53.1 | 106 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 45.8 | 92 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 51.6 | 103 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 51.1 | 102 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 51.8 | 104 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 49.9 | 100 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 44.5 | 89 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 62.9 | 126 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 57.1 | 114 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 42.0 | 84 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 19.1 | 38* a | 70-130 |
| 67-66-3 | Chloroform | 50 | 48.5 | 97 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 35.9 | 72 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 47.3 | 95 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 48.6 | 97 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 35.9 | 72 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 60.5 | 121 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 52.6 | 105 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 53.3 | 107 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 53.9 | 108 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 51.3 | 103 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 45.9 | 92 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 44.8 | 90 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 51.6 | 103 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 50.0 | 100 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 48.2 | 96 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 50.0 | 100 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 48.2 | 96 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 47.4 | 95 | 70-130 |

# Blank Spike Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1411-BS | M43700.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3751-6

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 56.2 | 112 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 53.8 | 108 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 48.0 | 96 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 50.1 | 100 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 159 | 64* a | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 40.4 | 81 | 77-137 |
| 100-41-4 | Ethylbenzene | 50 | 57.0 | 114 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 76.9 | 154* b | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 41.9 | 84 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 57.1 | 114 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 54.1 | 108 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 40.6 | 81 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 35.1 | 70 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 49.9 | 100 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 46.1 | 92 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 44.0 | 88 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 48.7 | 97 | 70-130 |
| 100-42-5 | Styrene | 50 | 55.6 | 111 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 62.5 | 125 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 35.8 | 72 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 71.6 | 143* b | 70-130 |
| 108-88-3 | Toluene | 50 | 54.9 | 110 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 56.4 | 113 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 61.3 | 123 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 54.5 | 109 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 48.0 | 96 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 55.8 | 112 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 52.2 | 104 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 35.1 | 70 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 49.0 | 98 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylhenzene | 50 | 48.4 | 97 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 26.9 | 54* a | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 37.7 | 75 | 70-130 |
| | m,p-Xylene | 100 | 120 | 120 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 59.1 | 118 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 179 | 119 | 70-130 |

# Blank Spike Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1411-BS | M43700.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3751-6

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | 70-130% |
| 2037-26-5 | Toluene-D8 | 92% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 85% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3751-4MS | V2134.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4MSD | V2135.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4 | V2130.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3751-1, MC3751-2, MC3751-3, MC3751-4, MC3751-5

| CAS No. | Compound | MC3751-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 17.6 | | 128 | 112 | 74 | 123 | 79 | 9 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 638 | 1830 | 287* a | 1780 | 267* a | 3 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 128 | 695 | 545* a | 746 | 559* a | 7 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 128 | 126 | 99 | 134 | 100 | 6 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 128 | 115 | 90 | 123 | 92 | 7 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 128 | 123 | 96 | 133 | 100 | 8 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 128 | 119 | 93 | 129 | 97 | 8 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 128 | 130 | 102 | 141 | 106 | 8 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 128 | 103 | 81 | 111 | 83 | 7 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 128 | 180 | 141* b | 203 | 152* b | 12 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 128 | 134 | 105 | 143 | 107 | 6 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 128 | 121 | 95 | 129 | 97 | 6 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 128 | 115 | 90 | 124 | 93 | 8 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 128 | 104 | 82 | 112 | 84 | 7 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 128 | 103 | 81 | 110 | 82 | 7 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 128 | 128 | 100 | 137 | 103 | 7 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 128 | 121 | 95 | 129 | 97 | 6 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 128 | ND | 0* b | ND | 0* b | nc | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 128 | 118 | 93 | 129 | 97 | 9 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 128 | 109 | 85 | 117 | 88 | 7 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 128 | 114 | 89 | 121 | 91 | 6 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 128 | 117 | 92 | 124 | 93 | 6 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 128 | 166 | 130 | 181 | 136* b | 9 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 128 | 126 | 99 | 138 | 103 | 9 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 128 | 139 | 109 | 150 | 112 | 8 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 128 | 129 | 101 | 137 | 103 | 6 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 128 | 119 | 93 | 125 | 94 | 5 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 128 | 116 | 91 | 124 | 93 | 7 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 128 | 103 | 81 | 107 | 80 | 4 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 128 | 125 | 98 | 135 | 101 | 8 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 128 | 125 | 98 | 135 | 101 | 8 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 128 | 122 | 96 | 130 | 97 | 6 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 128 | 118 | 93 | 128 | 96 | 8 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 128 | 118 | 93 | 126 | 94 | 7 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 128 | 124 | 97 | 133 | 100 | 7 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 128 | 131 | 103 | 141 | 106 | 7 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3751-4MS | V2134.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4MSD | V2135.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4 | V2130.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3751-1, MC3751-2, MC3751-3, MC3751-4, MC3751-5

| CAS No. | Compound | MC3751-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 128 | 119 | 93 | 130 | 97 | 9 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 128 | 116 | 91 | 124 | 93 | 7 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 128 | 126 | 99 | 137 | 103 | 8 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 128 | 141 | 111 | 152 | 114 | 8 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 638 | 824 | 129 | 961 | 144* b | 15 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 128 | 161 | 126 | 173 | 130 | 7 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 2.9 | | 128 | 132 | 101 | 141 | 104 | 7 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 128 | 117 | 92 | 125 | 94 | 7 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 128 | 198 | 155* b | 218 | 163* b | 10 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 128 | 137 | 107 | 148 | 111 | 8 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 128 | 126 | 99 | 135 | 101 | 7 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 128 | 131 | 103 | 144 | 108 | 9 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 128 | 208 | 163* b | 225 | 169* b | 8 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 128 | 132 | 104 | 145 | 109 | 9 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 128 | 130 | 102 | 141 | 106 | 8 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 128 | 160 | 125 | 171 | 128 | 7 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 0.77 | J | 128 | 122 | 95 | 129 | 96 | 6 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 128 | 126 | 99 | 133 | 100 | 5 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 128 | 118 | 93 | 128 | 96 | 8 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 128 | 159 | 125 | 172 | 129 | 8 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 128 | 118 | 93 | 125 | 94 | 6 | 70-130/30 |
| 108-88-3 | Toluene | 7.7 | | 128 | 122 | 90 | 130 | 92 | 6 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 128 | 127 | 100 | 133 | 100 | 5 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 128 | 132 | 104 | 138 | 103 | 4 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 128 | 108 | 85 | 118 | 88 | 9 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 128 | 134 | 105 | 144 | 108 | 7 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 128 | 114 | 89 | 121 | 91 | 6 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 128 | 96.4 | 76 | 102 | 76 | 6 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 128 | 157 | 123 | 174 | 130 | 10 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 0.88 | J | 128 | 118 | 92 | 125 | 93 | 6 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 128 | 116 | 91 | 123 | 92 | 6 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 128 | 119 | 93 | 119 | 89 | 0 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 128 | 91.5 | 72 | 97.4 | 73 | 6 | 70-130/30 |
| | m,p-Xylene | ND | | 255 | 260 | 102 | 278 | 104 | 7 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 128 | 126 | 99 | 137 | 103 | 8 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 383 | 386 | 101 | 415 | 104 | 7 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3751-4MS | V2134.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4MSD | V2135.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |
| MC3751-4 | V2130.D | 1 | 09/27/11 | AMY | n/a | n/a | MSV93 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3751-1, MC3751-2, MC3751-3, MC3751-4, MC3751-5

| CAS No. | Surrogate Recoveries | MS | MSD | MC3751-4 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | 99% | 92% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 97% | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | 97% | 95% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3903-9MS | M43708.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |
| MC3903-9MSD | M43709.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |
| MC3903-9 | M43707.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3751-6

| CAS No. | Compound | MC3903-9 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 5.0 U | | 50 | 27.3 | 55* [a] | 25.7 | 51* [a] | 6 | 70-130/30 |
| 107-02-8 | Acrolein | 25 U | | 250 | 316 | 126 | 314 | 126 | 1 | 70-130/30 |
| 107-13-1 | Acrylonitrile | 5.0 U | | 50 | 147 | 294* [b] | 143 | 286* [b] | 3 | 70-130/30 |
| 71-43-2 | Benzene | 0.50 U | | 50 | 47.2 | 94 | 49.6 | 99 | 5 | 70-130/30 |
| 108-86-1 | Bromobenzene | 5.0 U | | 50 | 57.5 | 115 | 58.7 | 117 | 2 | 70-130/30 |
| 74-97-5 | Bromochloromethane | 5.0 U | | 50 | 51.6 | 103 | 51.9 | 104 | 1 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | 1.0 U | | 50 | 59.9 | 120 | 60.3 | 121 | 1 | 70-130/30 |
| 75-25-2 | Bromoform | 1.0 U | | 50 | 59.0 | 118 | 58.2 | 116 | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | 2.0 U | | 50 | 31.8 | 64* [a] | 33.6 | 67* [a] | 6 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | 5.0 U | | 50 | 43.5 | 87 | 45.2 | 90 | 4 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | 5.0 U | | 50 | 54.8 | 110 | 56.9 | 114 | 4 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | 5.0 U | | 50 | 55.9 | 112 | 57.7 | 115 | 3 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | 5.0 U | | 50 | 53.8 | 108 | 55.6 | 111 | 3 | 70-130/30 |
| 75-15-0 | Carbon disulfide | 5.0 U | | 50 | 31.7 | 63* [a] | 33.5 | 67* [a] | 6 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | 1.0 U | | 50 | 65.9 | 132* [a] | 68.4 | 137* [a] | 4 | 70-130/30 |
| 108-90-7 | Chlorobenzene | 1.0 U | | 50 | 60.1 | 120 | 61.1 | 122 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | 2.0 U | | 50 | 29.8 | 60* [a] | 31.7 | 63* [a] | 6 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 5.0 U | | 50 | ND | 0* [a] | ND | 0* [a] | nc | 70-130/30 |
| 67-66-3 | Chloroform | 1.0 U | | 50 | 50.5 | 101 | 51.3 | 103 | 2 | 70-130/30 |
| 74-87-3 | Chloromethane | 2.0 U | | 50 | 20.8 | 42* [a] | 22.2 | 44* [a] | 7 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | 5.0 U | | 50 | 49.4 | 99 | 51.2 | 102 | 4 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | 5.0 U | | 50 | 50.7 | 101 | 52.5 | 105 | 3 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 5.0 U | | 50 | 42.4 | 85 | 40.6 | 81 | 4 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | 1.0 U | | 50 | 66.5 | 133* [a] | 65.8 | 132* [a] | 1 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | 2.0 U | | 50 | 56.6 | 113 | 56.8 | 114 | 0 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | 1.0 U | | 50 | 57.6 | 115 | 58.4 | 117 | 1 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | 1.0 U | | 50 | 56.9 | 114 | 58.6 | 117 | 3 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | 1.0 U | | 50 | 54.3 | 109 | 56.1 | 112 | 3 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | 2.0 U | | 50 | 29.4 | 59* [a] | 30.9 | 62* [a] | 5 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | 1.0 U | | 50 | 42.3 | 85 | 43.9 | 88 | 4 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | 1.0 U | | 50 | 55.8 | 112 | 55.0 | 110 | 1 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | 1.0 U | | 50 | 41.9 | 84 | 44.0 | 88 | 5 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | 1.0 U | | 50 | 47.1 | 94 | 48.8 | 98 | 4 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | 1.0 U | | 50 | 45.9 | 92 | 48.4 | 97 | 5 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | 2.0 U | | 50 | 48.3 | 97 | 49.6 | 99 | 3 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | 5.0 U | | 50 | 50.6 | 101 | 50.1 | 100 | 1 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3903-9MS | M43708.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |
| MC3903-9MSD | M43709.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |
| MC3903-9 | M43707.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3751-6

| CAS No. | Compound | MC3903-9 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 5.0 U | | 50 | 58.7 | 117 | 60.7 | 121 | 3 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | 5.0 U | | 50 | 54.1 | 108 | 56.4 | 113 | 4 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | 0.50 U | | 50 | 49.2 | 98 | 50.8 | 102 | 3 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | 0.50 U | | 50 | 54.2 | 108 | 55.1 | 110 | 2 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | 25 U | | 250 | 157 | 63* [a] | 161 | 64* [a] | 3 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | 5.0 U | | 50 | 42.7 | 85 | 43.7 | 87 | 2 | 72-139/30 |
| 100-41-4 | Ethylbenzene | 1.0 U | | 50 | 59.3 | 119 | 61.3 | 123 | 3 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | 5.0 U | | 50 | 87.9 | 176* [b] | 89.2 | 178* [b] | 1 | 70-130/30 |
| 591-78-6 | 2-Hexanone | 5.0 U | | 50 | 37.9 | 76 | 37.0 | 74 | 2 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | 5.0 U | | 50 | 61.3 | 123 | 62.8 | 126 | 2 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | 5.0 U | | 50 | 58.6 | 117 | 59.8 | 120 | 2 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | 1.0 U | | 50 | 38.9 | 78 | 39.6 | 79 | 2 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 5.0 U | | 50 | 38.1 | 76 | 37.9 | 76 | 1 | 70-130/30 |
| 74-95-3 | Methylene bromide | 5.0 U | | 50 | 54.0 | 108 | 53.1 | 106 | 2 | 70-130/30 |
| 75-09-2 | Methylene chloride | 2.0 U | | 50 | 42.0 | 84 | 43.1 | 86 | 3 | 70-130/30 |
| 91-20-3 | Naphthalene | 5.0 U | | 50 | 48.5 | 97 | 47.4 | 95 | 2 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 5.0 U | | 50 | 51.3 | 103 | 52.9 | 106 | 3 | 70-130/30 |
| 100-42-5 | Styrene | 5.0 U | | 50 | 58.3 | 117 | 60.0 | 120 | 3 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 5.0 U | | 50 | 67.4 | 135* [a] | 68.4 | 137* [a] | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.0 U | | 50 | 39.3 | 79 | 39.0 | 78 | 1 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | 1.0 U | | 50 | 75.5 | 151* [b] | 77.4 | 155* [b] | 2 | 70-130/30 |
| 108-88-3 | Toluene | 1.0 U | | 50 | 57.6 | 115 | 59.1 | 118 | 3 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 5.0 U | | 50 | 61.5 | 123 | 61.2 | 122 | 0 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 5.0 U | | 50 | 66.7 | 133* [a] | 68.3 | 137* [a] | 2 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | 1.0 U | | 50 | 57.5 | 115 | 59.2 | 118 | 3 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | 1.0 U | | 50 | 53.1 | 106 | 52.9 | 106 | 0 | 70-130/30 |
| 79-01-6 | Trichloroethene | 1.0 U | | 50 | 58.0 | 116 | 59.8 | 120 | 3 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | 1.0 U | | 50 | 45.0 | 90 | 46.8 | 94 | 4 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | 5.0 U | | 50 | 38.8 | 78 | 38.0 | 76 | 2 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 5.0 U | | 50 | 51.7 | 103 | 52.9 | 106 | 2 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 5.0 U | | 50 | 51.8 | 104 | 52.9 | 106 | 2 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | 5.0 U | | 50 | 22.2 | 44* [a] | 22.2 | 44* [a] | 0 | 70-130/30 |
| 75-01-4 | Vinyl chloride | 1.0 U | | 50 | 23.1 | 46* [a] | 25.3 | 51* [a] | 9 | 70-130/30 |
| | m,p-Xylene | 1.0 U | | 100 | 126 | 126 | 130 | 130 | 3 | 70-130/30 |
| 95-47-6 | o-Xylene | 1.0 U | | 50 | 63.1 | 126 | 64.8 | 130 | 3 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 1.0 U | | 150 | 189 | 126 | 195 | 130 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3903-9MS | M43708.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |
| MC3903-9MSD | M43709.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |
| MC3903-9 | M43707.D | 1 | 10/01/11 | JP | n/a | n/a | MSM1411 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3751-6

| CAS No. | Surrogate Recoveries | MS | MSD | MC3903-9 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | 83% | 85% | 70-130% |
| 2037-26-5 | Toluene-D8 | 93% | 95% | 94% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 85% | 87% | 84% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Volatile Internal Standard Area Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1411-CC1370 | Injection Date: | 10/01/11 |
| Lab File ID: | M43699.D | Injection Time: | 12:18 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 108349 | 9.19 | 150568 | 10.07 | 73541 | 13.34 | 102638 | 15.90 | 27244 | 6.74 |
| Upper Limit [a] | 216698 | 9.69 | 301136 | 10.57 | 147082 | 13.84 | 205276 | 16.40 | 54488 | 7.24 |
| Lower Limit [b] | 54175 | 8.69 | 75284 | 9.57 | 36771 | 12.84 | 51319 | 15.40 | 13622 | 6.24 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1411-BS | 112965 | 9.19 | 157244 | 10.07 | 74015 | 13.34 | 103657 | 15.90 | 24863 | 6.75 |
| MSM1411-MB | 104141 | 9.19 | 145368 | 10.07 | 68502 | 13.34 | 94213 | 15.90 | 27128 | 6.74 |
| ZZZZZZ | 101355 | 9.19 | 138324 | 10.07 | 63959 | 13.34 | 90068 | 15.90 | 25917 | 6.74 |
| ZZZZZZ | 94792 | 9.19 | 129693 | 10.07 | 58615 | 13.34 | 83276 | 15.90 | 22561 | 6.74 |
| MC3751-6 | 92971 | 9.19 | 125846 | 10.07 | 57430 | 13.34 | 81986 | 15.90 | 15224 | 6.74 |
| ZZZZZZ | 92912 | 9.19 | 125327 | 10.07 | 58400 | 13.34 | 83162 | 15.90 | 20466 | 6.74 |
| MC3903-9 | 86749 | 9.19 | 119046 | 10.07 | 56991 | 13.34 | 80182 | 15.90 | 16359 | 6.74 |
| MC3903-9MS | 96733 | 9.19 | 134810 | 10.07 | 64957 | 13.34 | 92701 | 15.90 | 20429 | 6.74 |
| MC3903-9MSD | 98212 | 9.19 | 135682 | 10.07 | 66195 | 13.34 | 95045 | 15.90 | 20225 | 6.74 |
| ZZZZZZ | 99384 | 9.19 | 136971 | 10.07 | 65999 | 13.34 | 91670 | 15.90 | 30264 | 6.74 |
| ZZZZZZ | 97324 | 9.19 | 136257 | 10.07 | 64038 | 13.34 | 90181 | 15.90 | 23360 | 6.74 |
| ZZZZZZ | 95057 | 9.19 | 130401 | 10.07 | 60434 | 13.34 | 85174 | 15.90 | 23148 | 6.74 |
| ZZZZZZ | 92886 | 9.19 | 127890 | 10.07 | 60862 | 13.34 | 85250 | 15.90 | 21977 | 6.74 |
| ZZZZZZ | 90238 | 9.19 | 123419 | 10.07 | 59366 | 13.34 | 82771 | 15.90 | 21614 | 6.74 |
| ZZZZZZ | 100465 | 9.19 | 136510 | 10.07 | 67149 | 13.34 | 99452 | 15.90 | 23588 | 6.75 |
| ZZZZZZ | 105635 | 9.19 | 146253 | 10.07 | 68776 | 13.34 | 96788 | 15.90 | 25795 | 6.74 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV93-CC67 | Injection Date: | 09/27/11 |
| Lab File ID: | V2117.D | Injection Time: | 08:24 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 382176 | 6.54 | 577011 | 7.72 | 304263 | 11.08 | 309226 | 13.31 | 114564 | 3.51 |
| Upper Limit [a] | 764352 | 7.04 | 1154022 | 8.22 | 608526 | 11.58 | 618452 | 13.81 | 229128 | 4.01 |
| Lower Limit [b] | 191088 | 6.04 | 288506 | 7.22 | 152132 | 10.58 | 154613 | 12.81 | 57282 | 3.01 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSV93-BS | 386248 | 6.53 | 582182 | 7.72 | 306946 | 11.08 | 310085 | 13.31 | 121956 | 3.51 |
| MSV93-MB | 366766 | 6.53 | 570512 | 7.72 | 307573 | 11.08 | 316187 | 13.31 | 179003 | 3.50 |
| ZZZZZZ | 379165 | 6.53 | 583490 | 7.72 | 324173 | 11.07 | 321761 | 13.31 | 154223 | 3.50 |
| ZZZZZZ | 408150 | 6.54 | 621283 | 7.72 | 389484 | 11.07 | 328323 | 13.31 | 172368 | 3.52 |
| ZZZZZZ | 390503 | 6.54 | 600499 | 7.72 | 326888 | 11.08 | 336997 | 13.31 | 161133 | 3.50 |
| ZZZZZZ | 400328 | 6.54 | 609421 | 7.72 | 323373 | 11.08 | 333963 | 13.31 | 160035 | 3.51 |
| ZZZZZZ | 411549 | 6.53 | 619133 | 7.72 | 317698 | 11.08 | 264849 | 13.31 | 172752 | 3.52 |
| MC3751-2 | 407282 | 6.53 | 641252 | 7.72 | 339217 | 11.08 | 340005 | 13.32 | 76721 | 3.79 |
| MC3751-3 | 408895 | 6.54 | 638281 | 7.73 | 339575 | 11.08 | 340895 | 13.31 | 163280 | 3.51 |
| MC3751-4 | 381330 | 6.54 | 586351 | 7.72 | 314722 | 11.08 | 317386 | 13.31 | 168953 | 3.50 |
| MC3751-5 | 375919 | 6.54 | 575912 | 7.72 | 311706 | 11.08 | 309440 | 13.31 | 169666 | 3.51 |
| ZZZZZZ | 364332 | 6.54 | 563000 | 7.72 | 290084 | 11.08 | 300080 | 13.31 | 102976 | 3.49 |
| MC3751-1 | 380161 | 6.54 | 589035 | 7.73 | 320498 | 11.08 | 322674 | 13.31 | 166030 | 3.51 |
| MC3751-4MS | 394375 | 6.53 | 597344 | 7.72 | 318579 | 11.08 | 324283 | 13.31 | 175067 | 3.50 |
| MC3751-4MSD | 409918 | 6.53 | 627814 | 7.72 | 335314 | 11.08 | 342075 | 13.31 | 188954 | 3.50 |
| ZZZZZZ | 385525 | 6.53 | 589564 | 7.72 | 314630 | 11.08 | 324006 | 13.31 | 170885 | 3.50 |
| ZZZZZZ | 383427 | 6.53 | 589990 | 7.72 | 316894 | 11.07 | 322911 | 13.31 | 163560 | 3.49 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Surrogate Recovery Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3751-6 | M43705.D | 83.0 | 92.0 | 82.0 |
| MC3903-9MS | M43708.D | 82.0 | 93.0 | 85.0 |
| MC3903-9MSD | M43709.D | 83.0 | 95.0 | 87.0 |
| MSM1411-BS | M43700.D | 82.0 | 92.0 | 85.0 |
| MSM1411-MB | M43702.D | 85.0 | 94.0 | 86.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

5.5.1

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# Volatile Surrogate Recovery Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, 1L

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3751-1 | V2133.D | 96.0 | 98.0 | 97.0 |
| MC3751-2 | V2128.D | 89.0 | 90.0 | 92.0 |
| MC375I-3 | V2129.D | 94.0 | 97.0 | 97.0 |
| MC3751-4 | V2130.D | 92.0 | 96.0 | 95.0 |
| MC3751-5 | V2131.D | 94.0 | 99.0 | 97.0 |
| MC3751-4MS | V2134.D | 99.0 | 98.0 | 98.0 |
| MC3751-4MSD | V2135.D | 99.0 | 97.0 | 97.0 |
| MSV93-BS | V2120.D | 100.0 | 99.0 | 99.0 |
| MSV93-MB | V2121.D | 101.0 | 97.0 | 95.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

New England ACCUTEST LABORATORIES

# GC Volatiles



## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1324-MB | BH24096.D | 1 | 09/24/11 | WS | n/a | n/a | GBH1324 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3751-1, MC3751-2, MC3751-3, MC3751-4, MC3751-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 0.95 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 93% | 36-148% |

# Blank Spike Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1324-BSP | BH24097.D | 1 | 09/24/11 | WS | n/a | n/a | GBH1324 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3751-1, MC3751-2, MC3751-3, MC3751-4, MC3751-5

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 15.9 | 80 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 93% | 36-148% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Bateh | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3731-12MS | BH24105.D | 1 | 09/24/11 | WS | n/a | n/a | GBH1324 |
| MC3731-12MSD | BH24106.D | 1 | 09/24/11 | WS | n/a | n/a | GBH1324 |
| MC3731-12 | BH24104.D | 1 | 09/24/11 | WS | n/a | n/a | GBH1324 |



The QC reported here applies to the following samples: Method: SW846 8015

MC3751-1, MC3751-2, MC3751-3, MC3751-4, MC3751-5

| CAS No. | Compound | MC3731-12 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 41.8 | | 48.7 | 46.3 | 9* [a] | 40.4 | -3* [a] | 14 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3731-12 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 95% | 95% | 104% | 36-148% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Volatile Surrogate Recovery Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3751-1 | BH24119.D | 92.0 |
| MC3751-2 | BH24120.D | 91.0 |
| MC3751-3 | BH24121.D | 89.0 |
| MC3751-4 | BH24122.D | 90.0 |
| MC3751-5 | BH24123.D | 90.0 |
| GBH1324-BSP | BH24097.D | 93.0 |
| GBH1324-MB | BH24096.D | 93.0 |
| MC3731-12MS | BH24105.D | 95.0 |
| MC3731-12MSD | BH24106.D | 95.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1324-CC1043 | Injection Date: | 09/24/11 |
| Lab File ID: | BH24095.D | Injection Time: | 09:04 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1324-MB | BH24096.D | 09/24/11 | 09:44 | 32.40 |
| GBH1323-MB | BH24096A.D | 09/24/11 | 09:44 | 32.40 |
| GBH1324-BSP | BH24097.D | 09/24/11 | 10:25 | 32.39 |
| GBH1323-BSP | BH24097A.D | 09/24/11 | 10:25 | 32.39 |
| MC3872-2 | BH24098.D | 09/24/11 | 11:04 | 32.39 |
| MC3872-2MS | BH24099.D | 09/24/11 | 11:45 | 32.40 |
| MC3872-2MSD | BH24100.D | 09/24/11 | 12:25 | 32.39 |
| ZZZZZZ | BH24101.D | 09/24/11 | 13:05 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1323-CC1043 | Injection Date: | 09/24/11 |
| Lab File ID: | BH24095A.D | Injection Time: | 09:04 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1324-MB | BH24096.D | 09/24/11 | 09:44 | 32.40 |
| GBH1323-MB | BH24096A.D | 09/24/11 | 09:44 | 32.40 |
| GBH1324-BSP | BH24097.D | 09/24/11 | 10:25 | 32.39 |
| GBH1323-BSP | BH24097A.D | 09/24/11 | 10:25 | 32.39 |
| MC3872-2 | BH24098.D | 09/24/11 | 11:04 | 32.39 |
| MC3872-2MS | BH24099.D | 09/24/11 | 11:45 | 32.40 |
| MC3872-2MSD | BH24100.D | 09/24/11 | 12:25 | 32.39 |
| ZZZZZZ | BH24101.D | 09/24/11 | 13:05 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| **Check Std:** | GBH1324-CC1043 | **Injection Date:** | 09/24/11 |
| **Lab File ID:** | BH24102.D | **Injection Time:** | 13:45 |
| **Instrument ID:** | GCBH | **Method:** | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BH24103.D | 09/24/11 | 14:26 | 32.40 |
| MC3731-12 | BH24104.D | 09/24/11 | 15:06 | 32.40 |
| MC3731-12MS | BH24105.D | 09/24/11 | 15:46 | 32.40 |
| MC3731-12MSD | BH24106.D | 09/24/11 | 16:26 | 32.40 |
| ZZZZZZ | BH24107.D | 09/24/11 | 17:06 | 32.40 |
| ZZZZZZ | BH24108.D | 09/24/11 | 17:46 | 32.40 |
| ZZZZZZ | BH24109.D | 09/24/11 | 18:27 | 32.40 |
| ZZZZZZ | BH24110.D | 09/24/11 | 19:07 | 32.40 |
| ZZZZZZ | BH24111.D | 09/24/11 | 19:47 | 32.40 |
| ZZZZZZ | BH24112.D | 09/24/11 | 20:27 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1323-CC1043 | Injection Date: | 09/24/11 |
| Lab File ID: | BH24102A.D | Injection Time: | 13:45 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BH24103.D | 09/24/11 | 14:26 | 32.40 |
| MC3731-12 | BH24104.D | 09/24/11 | 15:06 | 32.40 |
| MC3731-12MS | BH24105.D | 09/24/11 | 15:46 | 32.40 |
| MC3731-12MSD | BH24106.D | 09/24/11 | 16:26 | 32.40 |
| ZZZZZZ | BH24107.D | 09/24/11 | 17:06 | 32.40 |
| ZZZZZZ | BH24108.D | 09/24/11 | 17:46 | 32.40 |
| ZZZZZZ | BH24109.D | 09/24/11 | 18:27 | 32.40 |
| ZZZZZZ | BH24110.D | 09/24/11 | 19:07 | 32.40 |
| ZZZZZZ | BH24111.D | 09/24/11 | 19:47 | 32.40 |
| ZZZZZZ | BH24112.D | 09/24/11 | 20:27 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1324-CC1043 | Injection Date: | 09/24/11 |
| Lab File ID: | BH24113.D | Injection Time: | 21:08 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BH24114.D | 09/24/11 | 21:48 | 32.39 |
| ZZZZZZ | BH24115.D | 09/24/11 | 22:28 | 32.39 |
| ZZZZZZ | BH24116.D | 09/24/11 | 23:08 | 32.39 |
| ZZZZZZ | BH24117.D | 09/24/11 | 23:48 | 32.39 |
| ZZZZZZ | BH24118.D | 09/25/11 | 00:28 | 32.40 |
| MC3751-1 | BH24119.D | 09/25/11 | 01:08 | 32.39 |
| MC3751-2 | BH24120.D | 09/25/11 | 01:48 | 32.39 |
| MC3751-3 | BH24121.D | 09/25/11 | 02:29 | 32.39 |
| MC3751-4 | BH24122.D | 09/25/11 | 03:09 | 32.40 |
| MC3751-5 | BH24123.D | 09/25/11 | 03:49 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

New England ACCUTEST LABORATORIES

## GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26341-MB | BG31087.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3751-1, MC3751-2, MC3751-3, MC3751-4, MC3751-5



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 16 | 12 | mg/kg | |
| | TPH (> C28-C40) | ND | 16 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 43% | 24-147% |

# Blank Spike Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26341-BS | BG31088.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3751-1, MC3751-2, MC3751-3, MC3751-4, MC3751-5

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 160 | 121 | 76 | 63-139 |
| | TPH (>C28-C40) | 160 | 87.9 | 55 | 46-103 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 43% | 24-147% |

7.2.1

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# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26341-MS | BG31104.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |
| OP26341-MSD | BG31105.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |
| MC3693-1 | BG31107.D | 1 | 09/25/11 | KD | 09/22/11 | OP26341 | GBG1108 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3751-1, MC3751-2, MC3751-3, MC3751-4, MC3751-5

7.3.1

7

| CAS No. | Compound | MC3693-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 1030 | | 178 | 1030 | 0* [a] | 1030 | 0* [a] | 0 | 8-154/127 |
| | TPH (>C28-C40) | ND | | 178 | 74.6 | 42 | 76.0 | 43 | 2 | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3693-1 | Limits |
|---|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 29% | 30% | 32% | 24-147% |

(a) Outside control limits due to high level in sample relative to spike amount.

# Semivolatile Surrogate Recovery Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Method: SW846-8015 | Matrix: SO |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3751-1 | BG31089.D | 39.0 |
| MC3751-2 | BG31090.D | 29.0 |
| MC3751-3 | BG31113.D | 34.0 |
| MC3751-4 | BG31091.D | 30.0 |
| MC3751-5 | BG31092.D | 32.0 |
| OP26341-BS | BG31088.D | 43.0 |
| OP26341-MB | BG31087.D | 43.0 |
| OP26341-MS | BG31104.D | 29.0 |
| OP26341-MSD | BG31105.D | 30.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 1-Chlorooctadecane | 24-147% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/24/11 |
| Lab File ID: | BG31084.D | Injection Time: | 21:57 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31085.D | 09/24/11 | 22:43 | 14.98 |
| ZZZZZZ | BG31086.D | 09/24/11 | 23:30 | 14.98 |
| OP26341-MB | BG31087.D | 09/25/11 | 00:16 | 14.97 |
| OP26341-BS | BG31088.D | 09/25/11 | 01:03 | 14.97 |
| MC3751-1 | BG31089.D | 09/25/11 | 01:49 | 14.97 |
| MC3751-2 | BG31090.D | 09/25/11 | 02:35 | 14.96 |
| MC3751-4 | BG31091.D | 09/25/11 | 03:22 | 14.96 |
| MC3751-5 | BG31092.D | 09/25/11 | 04:08 | 14.97 |
| ZZZZZZ | BG31093.D | 09/25/11 | 04:54 | 14.98 |
| ZZZZZZ | BG31094.D | 09/25/11 | 05:41 | 14.98 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/25/11 |
| Lab File ID: | BG31095.D | Injection Time: | 06:27 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31096.D | 09/25/11 | 07:14 | 14.97 |
| ZZZZZZ | BG31097.D | 09/25/11 | 08:00 | 14.98 |
| ZZZZZZ | BG31098.D | 09/25/11 | 08:46 | 14.98 |
| OP26286-MS | BG31099.D | 09/25/11 | 09:32 | 14.99 |
| OP26286-MSD | BG31100.D | 09/25/11 | 10:19 | 14.98 |
| MC3644-1 | BG31101.D | 09/25/11 | 11:05 | 14.98 |
| ZZZZZZ | BG31102.D | 09/25/11 | 11:51 | 14.98 |
| ZZZZZZ | BG31103.D | 09/25/11 | 12:37 | 14.98 |
| OP26341-MS | BG31104.D | 09/25/11 | 13:24 | 14.98 |
| OP26341-MSD | BG31105.D | 09/25/11 | 14:10 | 14.98 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1108-CC1103 | Injection Date: | 09/25/11 |
| Lab File ID: | BG31106.D | Injection Time: | 14:56 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.96 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3693-1 | BG31107.D | 09/25/11 | 15:42 | 14.98 |
| ZZZZZZ | BG31108.D | 09/25/11 | 16:28 | 14.98 |
| ZZZZZZ | BG31109.D | 09/25/11 | 17:14 | 14.98 |
| ZZZZZZ | BG31110.D | 09/25/11 | 18:01 | 14.99 |
| ZZZZZZ | BG31111.D | 09/25/11 | 18:47 | 14.98 |
| MC3751-3 | BG31113.D | 09/25/11 | 20:19 | 14.96 |
| ZZZZZZ | BG31114.D | 09/25/11 | 21:06 | 14.96 |
| ZZZZZZ | BG31115.D | 09/25/11 | 21:52 | 14.97 |
| GBG1108-ECC110 | BG31116.D | 09/25/11 | 22:38 | 14.96 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.3

7

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## General Chemistry

## QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC3751
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC3751-1 Analyzed: 22-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP33 (30-31.5)92011

| | | |
|---|---|---|
| Wet Weight (Total) | 27.991 | g |
| Tare Weight | 21.407 | g |
| Dry Weight (Total) | 27.514 | g |
| Solids, Percent | 92.8 | % |

Sample: MC3751-2 Analyzed: 22-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP33 (20-22.5)92011

| | | |
|---|---|---|
| Wet Weight (Total) | 29.38 | g |
| Tare Weight | 21.381 | g |
| Dry Weight (Total) | 28.667 | g |
| Solids, Percent | 91.1 | % |

Sample: MC3751-3 Analyzed: 22-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP33 (10-12.5)92011

| | | |
|---|---|---|
| Wet Weight (Total) | 25.82 | g |
| Tare Weight | 18.853 | g |
| Dry Weight (Total) | 24.427 | g |
| Solids, Percent | 80 | % |

Sample: MC3751-4 Analyzed: 22-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE5 (15-17.5)92011

| | | |
|---|---|---|
| Wet Weight (Total) | 25.191 | g |
| Tare Weight | 18.356 | g |
| Dry Weight (Total) | 24.58 | g |
| Solids, Percent | 91.1 | % |

Sample: MC3751-5 Analyzed: 22-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE28 (32-34)92011

| | | |
|---|---|---|
| Wet Weight (Total) | 27.616 | g |
| Tare Weight | 19.73 | g |
| Dry Weight (Total) | 26.978 | g |
| Solids, Percent | 91.9 | % |

# SVE Install 2011 Data Review

**Laboratory SDG: MC3835**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 1/3/2012**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| SVE-31 (20-22.5) 092111 | SVE-9 (12.5-15) 092111 |
| SVE-7 (12.5-15) 092111 | SVE-7 (12.5-15) 092111 Dup |
| SVE-30 (25-27.5) 092111 | SVE-9 092111 EB |
| TB 092111 | |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes, however sample duplicate pair SVE-7 (12.5-15) 092111/SVE-7 (12.5-15) 092111 Dup were separated into SDGs MC3836 and MC3835, respectively. Data from the sample duplicate pair was reviewed and discussed in this data review.

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS recoveries were outside evaluation criteria. Total xylenes were qualified due to field duplicate RPD outside evaluation criteria in field duplicate pair, SVE-7 (12.5-15) 092111/SVE-7 (12.5-15) 092111 Dup. Professional judgment was used to qualify acetone in sample SVE-7 (12.5-15) 092111 Dup. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 1.9° C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; therefore, no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSV95-BS | VOCs | Acrolein | **314** | NA | 70-130 |
| MSV95-BS | VOCs | Acrylonitrile | **572** | NA | 70-130 |
| MSV95-BS | VOCs | Vinyl chloride | **64** | NA | 70-130 |
| MSM1414-BS | VOCs | Acrylonitrile | **396** | NA | 70-130 |
| MSM1414-BS | VOCs | Carbon tetrachloride | **137** | NA | 70-130 |
| MSM1414-BS | VOCs | 2-Chloroethyl vinyl ether | **43** | NA | 70-130 |
| MSM1414-BS | VOCs | 2,2-Dichloropropane | **133** | NA | 70-130 |
| MSM1414-BS | VOCs | Hexachlorobutadiene | **155** | NA | 70-130 |
| MSM1414-BS | VOCs | Tetrachloroethene | **132** | NA | 70-130 |
| MSM1414-BS | VOCs | Vinyl acetate | **68** | NA | 70-130 |

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS MSM1414-BS was associated with trip blank TB-092111 and equipment blank SVE-9 092111 EB. Trip blank and equipment blank samples are quality control samples and are not qualified.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| SVE-7 (12.5-15) 092111 DUP | VOCs | Vinyl chloride | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, although not requested, equipment blank SVE-9 092111 was spiked and analyzed for TPH-GRO.

*Were MS/MSD recoveries within evaluation criteria?*

Yes

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

Yes, as noted in Section 1.0 of this data review, please see laboratory SDG MC3836 for

data of sample SVE-7 (12.5-15) 092111.

| Field ID | Field Duplicate ID |
|---|---|
| SVE-7 (12.5-15) 092111 | SVE-7 (12.5-15) 092111 Dup |

*Were field duplicates within evaluation criteria?*

No

| Field ID | Field Duplicate ID | Parameter | Analyte | RPD | Qualification |
|---|---|---|---|---|---|
| SVE-7 (12.5-15) 092111 | SVE-7 (12.5-15) 092111 Dup | VOCs | Xylene (total) | **200** | **J/UJ** |

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

Yes, professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations greater than two times (2X) the reporting limit (RL), since acetone is not representative of site conditions. Additionally, USEPA Method 5035A states that acidification of certain soils with sodium bisulfate may produce a false positive acetone artifact of 100-200 ppb, or more. Acetone reported at concentrations less than 200 ppb (ug/kg) were qualified.

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| SVE-7 (12.5-15) 092111 Dup | Acetone | 41.5 ug/kg | **U** | Professional Judgment |

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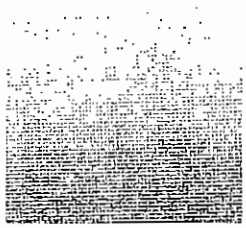
11/23/11





Technical Report for

Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC3835

Sampling Date: 09/21/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **105**

Reviewed on 1/3/12

Reza Pand
Lab Director

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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# Sample Summary

Shell Oil

Job No: MC3835

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| MC3835-1 | 09/21/11 | 14:45 | SWLR | 09/22/11 | SO | Soil | SVE31 (20-22.5)092111 |
| MC3835-2 | 09/21/11 | 14:05 | SWLR | 09/22/11 | SO | Soil | SVE9 (12.5-15)092111 |
| MC3835-3 | 09/21/11 | 09:05 | SWLR | 09/22/11 | SO | Soil | SVE7 (12.5-15)092111 DUP |
| MC3835-4 | 09/21/11 | 13:20 | SWLR | 09/22/11 | SO | Soil | SVE30 (25-27.5)092111 |
| MC3835-5 | 09/21/11 | 15:25 | SWLR | 09/22/11 | AQ | Equipment Blank | SVE9 092111 EB |
| MC3835-6 | 09/21/11 | 00:00 | SWLR | 09/22/11 | AQ | Trip Blank Water | TB 092111 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC3835 |
| **Site:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East | **Report Date** | 10/11/2011 9:38:51 AM |

5 Sample(s), 1 Trip Blank were collected on 09/21/2011 and were received at Accutest on 09/22/2011 properly preserved, at 1.9 Deg. C and intact. These Samples received an Accutest job number of MC3835. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix:** AQ **Batch ID:** MSM1414

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3889-1MS, MC3889-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 2,2-Dichloropropane, 2-Chloroethyl vinyl ether, Carbon tetrachloride, Hexachlorobutadiene, Tetrachloroethene, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,1,1-Trichloroethane, 1,4-Dioxane, 2,2-Dichloropropane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, Acrolein, Carbon tetrachloride, Dichlorodifluoromethane, Hexachlorobutadiene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,4-Dioxane, 2-Chloroethyl vinyl ether, Acrolein, Carbon tetrachloride, Dichlorodifluoromethane, Hexachlorobutadiene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSM1414-BS/MS/MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

**Matrix:** SO **Batch ID:** MSK1840

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3828-3MS, MC3828-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Reeovery(s) for 2-Butanone (MEK), 2-Hexanone, Acetone, Acrolein, Trichloroethene, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2-Butanone (MEK), 2-Hexanone, Acrolein, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

**Matrix:** SO **Batch ID:** MSV95

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3903-7MS, MC3903-7MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Vinyl chloride are outside control limits.
- Matrix Spike Recovery(s) for 1,1,2,2-Tetrachloroethane, 1,1-Dichloroethane, 1,1-Dichloroethene, 1,1-Dichloropropene, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dichloroethane, 1,2-Dichloropropane, 1,3,5-Trimethylbenzene, 1,3-Dichloropropane, 1,4-Dioxane, 2,2-Dichloropropane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Benzene, Bromobenzene, Bromomethane, Carbon disulfide, Chlorobenzene, Chloroethane, Chloroform, Chloromethane, cis-1,2-Dichloroethene, Dichlorodifluoromethane, Ethylbenzene, Isopropylbenzene, m,p-Xylene, Methyl Tert Butyl Ether, Methylene chloride, n-Butylbenzene, n-Propylbenzene, Naphthalene, o-Chlorotoluene, p-Chlorotoluene, p-Isopropyltoluene, sec-Butylbenzene, tert-Butylbenzene, trans-1,2-Dichloroethene, Trichlorofluoromethane, Vinyl chloride, Xylene (total) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

## Volatiles by GCMS By Method SW846 8260B

| Matrix: SO | Batch ID: MSV95 |
|---|---|

- Matrix Spike Duplicate Recovery(s) for 1,1,2,2-Tetrachloroethane, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene, 1,4-Dioxane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Bromobenzene, Isopropylbenzene, n-Butylbenzene, n-Propylbenzene, o-Chlorotoluene, p-Chlorotoluene, p-Isopropyltoluene, sec-Butylbenzene, tert-Butylbenzene, Chloroethane, Naphthalene are outside control limits. Outside control limits due to possible matrix interferenee. Refer to Blank Spike.
- RPD(s) for MSD for Chloroethane, Naphthalene are outside eontrol limits for sample MC3903-7MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- MC3903-7MSD for 4-Bromofluorobenzene: Outside eontrol limits due to possible matrix interference. Confirmed by MS/MSD.
- MSV95-BS/MS/MSD for Acrylonitrile, Acrolein: Outside control limits. Associated samples are non-detect for this compound.
- MC3903-7MS has internal standard outside eontrol limits. Outside control limits due to possible matrix interferenee. Confirmed by MS/MSD.

## Volatiles by GC By Method SW846 8015

| Matrix: AQ | Batch ID: GBH1336 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3835-5MS, MC3835-5MSD were used as the QC samples indicated.
- All method blanks for this bateh meet method specific eriteria.
- Calibration standard GBH1337-CC1043 utilized the same files as GBH1336-CC1043.

| Matrix: SO | Batch ID: GBH1324 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3731-12MS, MC3731-12MSD were used as the QC samples indicated.
- MS/MSD Recovery(s) for TPH-GRO (VOA) are outside eontrol limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Calibration standard GBH1323-CC1043 utilized the same files as GBH1324-CC1043.

## Extractables by GC By Method SW846-8015

| Matrix: AQ | Batch ID: OP26420 |
|---|---|

- All samples were extraeted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC4057-2MS, MC4057-2MSD were used as the QC samples indieated.

| Matrix: SO | Batch ID: OP26384 |
|---|---|

- All samples were extraeted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this bateh meet mcthod specific criteria.
- Sample(s) MC3836-3MS, MC3836-3MSD were used as the QC samples indicated.
- RPD(s) for MSD for TPH (>C28-C40) are outside control limits for sample OP26384-MSD. Outside control limits due to possible matrix interference.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix: SO | Batch ID: GN36258 |
|---|---|

- Sample(s) MC3836-3DUP were used as the QC samples for Solids. Percent.

The Aeeutest Laboratories of New England eertifies that all analysis were performed within method speeification. It is further reeommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the releasc of this report(MC3835).

New England ACCUTEST LABORATORIES

Sample Results

Report of Analysis

# Report of Analysis



3.1

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE31 (20-22.5)092111 | | |
| Lab Sample ID: | MC3835-1 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 91.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55090.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.78 g | 10.0 ml | 5.0 ul |
| Run #2 | | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 15000 | 3500 | ug/kg | |
| 107-02-8 | Acrolein | ND | 75000 | 51000 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 15000 | 6000 | ug/kg | |
| 71-43-2 | Benzene | ND | 1500 | 370 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 15000 | 570 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 15000 | 3100 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 6000 | 630 | ug/kg | |
| 75-25-2 | Bromoform | ND | 6000 | 1400 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 6000 | 2000 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 15000 | 3600 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 42300 | 15000 | 3800 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 8440 | 15000 | 500 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 15000 | 2000 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 15000 | 2900 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 6000 | 670 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 6000 | 280 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 15000 | 780 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 15000 | 15000 | ug/kg | |
| 67-66-3 | Chloroform | ND | 6000 | 450 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 15000 | 650 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 15000 | 420 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 15000 | 3400 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 15000 | 15000 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 6000 | 2000 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 6000 | 570 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 6000 | 450 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 6000 | 430 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 6000 | 420 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 6000 | 1000 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 6000 | 460 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 6000 | 430 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 6000 | 950 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE31 (20-22.5)092111 | | |
| Lab Sample ID: | MC3835-1 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 91.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 6000 | 810 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 6000 | 760 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 6000 | 680 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 15000 | 3500 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 15000 | 550 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 15000 | 580 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 6000 | 3000 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 6000 | 2100 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 75000 | 75000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 15000 | 9300 | ug/kg | |
| 100-41-4 | Ethylbenzene | 514000 | 6000 | 390 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 15000 | 15000 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 15000 | 3100 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 40400 | 15000 | 480 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | 5670 | 15000 | 490 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 6000 | 1900 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 15000 | 2500 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 15000 | 920 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 6000 | 1100 | ug/kg | |
| 91-20-3 | Naphthalene | 53800 | 15000 | 15000 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 111000 | 15000 | 480 | ug/kg | |
| 100-42-5 | Styrene | ND | 15000 | 1500 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 15000 | 3000 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 6000 | 530 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 6000 | 500 | ug/kg | |
| 108-88-3 | Toluene | 945000 | 15000 | 540 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 15000 | 3300 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 15000 | 15000 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 6000 | 550 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 6000 | 760 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 6000 | 590 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 6000 | 2800 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 15000 | 630 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 524000 | 15000 | 470 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 153000 | 15000 | 540 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 15000 | 3500 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 6000 | 1900 | ug/kg | |
| | m,p-Xylene | 1280000 | 6000 | 750 | ug/kg | |
| 95-47-6 | o-Xylene | 535000 | 6000 | 550 | ug/kg | |
| 1330-20-7 | Xylene (total) | 1810000 | 6000 | 380 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE31 (20-22.5)092111 | | |
| Lab Sample ID: | MC3835-1 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 91.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 106% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 107% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.1

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE31 (20-22.5)092111 | | |
| Lab Sample ID: | MC3835-1 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8015 | Percent Solids: | 91.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24115.D | 1 | 09/24/11 | WS | n/a | n/a | GBH1324 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.78 g | 10.0 ml | 10.0 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 11700 | 150 | 28 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 87% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE31 (20-22.5)092111 | | |
| Lab Sample ID: | MC3835-1 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 91.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31436.D | 10 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.2 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 2030 | 180 | 140 | mg/kg | |
| | TPH (> C28-C40) | ND | 180 | 140 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 102% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE9 (12.5-15)092111 | | |
| Lab Sample ID: | MC3835-2 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 73.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55085.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.88 g | 10.0 ml | 100 ul |
| Run #2 | | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 790 | 180 | ug/kg | |
| 107-02-8 | Acrolein | ND | 3900 | 2700 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 790 | 320 | ug/kg | |
| 71-43-2 | Benzene | 863 | 79 | 20 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 790 | 30 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 790 | 160 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 320 | 33 | ug/kg | |
| 75-25-2 | Bromoform | ND | 320 | 75 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 320 | 110 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 790 | 190 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 790 | 200 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 790 | 26 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 790 | 100 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 790 | 150 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 320 | 35 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 320 | 15 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 790 | 41 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 790 | 790 | ug/kg | |
| 67-66-3 | Chloroform | ND | 320 | 23 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 790 | 34 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 790 | 22 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 790 | 180 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 790 | 790 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 320 | 100 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 320 | 30 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 320 | 24 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 320 | 23 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 320 | 22 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 320 | 54 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 320 | 24 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 320 | 23 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 320 | 50 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE9 (12.5-15)092111 | | |
| Lab Sample ID: | MC3835-2 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 73.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 320 | 43 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 320 | 40 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 320 | 36 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 790 | 180 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 790 | 29 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 790 | 30 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 320 | 160 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 320 | 110 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 3900 | 3900 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 790 | 490 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 320 | 20 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 790 | 790 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 790 | 170 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 790 | 25 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 790 | 26 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 320 | 98 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 790 | 130 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 790 | 48 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 320 | 57 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 790 | 790 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 790 | 25 | ug/kg | |
| 100-42-5 | Styrene | ND | 790 | 79 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 790 | 160 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 320 | 28 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 320 | 27 | ug/kg | |
| 108-88-3 | Toluene | ND | 790 | 28 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 790 | 170 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 790 | 790 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 320 | 29 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 320 | 40 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 320 | 31 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 320 | 150 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 790 | 33 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 790 | 25 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 790 | 29 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 790 | 190 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 320 | 100 | ug/kg | |
| | m,p-Xylene | ND | 320 | 40 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 320 | 29 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 320 | 20 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE9 (12.5-15)092111 | | |
| Lab Sample ID: | MC3835-2 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 73.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 112% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 108% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 117% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE9 (12.5-15)092111 | | |
| Lab Sample ID: | MC3835-2 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8015 | Percent Solids: | 73.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24116.D | 1 | 09/24/11 | WS | n/a | n/a | GBH1324 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.88 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 458 | 16 | 3.0 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 92% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE9 (12.5-15)092111 | | |
| Lab Sample ID: | MC3835-2 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 73.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31425.D | 1 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.4 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 25.7 | 22 | 17 | mg/kg | |
| | TPH (> C28-C40) | ND | 22 | 17 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 80% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE7 (12.5-15)092111 DUP | | |
| Lab Sample ID: | MC3835-3 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 92.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2179.D | 1 | 09/29/11 | AMY | n/a | n/a | MSV95 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.86 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~41.5~~ U | ~~5.6~~ 41.5 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 28 | 19 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.6 | 2.2 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.56 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.6 | 0.21 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.6 | 1.2 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.2 | 0.23 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.2 | 0.53 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.2 | 0.75 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.6 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.6 | 1.4 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.6 | 0.18 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.6 | 0.73 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.6 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.2 | 0.25 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.2 | 0.10 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.6 | 0.29 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.6 | 5.6 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.2 | 0.17 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.6 | 0.24 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.6 | 0.16 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.6 | 1.3 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.6 | 5.6 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.2 | 0.73 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.2 | 0.21 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.2 | 0.17 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.2 | 0.38 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.2 | 0.17 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.2 | 0.16 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.2 | 0.35 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE7 (12.5-15)092111 DUP | | |
| Lab Sample ID: | MC3835-3 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 92.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.2 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.2 | 0.28 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.2 | 0.25 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.6 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.6 | 0.21 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.6 | 0.21 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.2 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.2 | 0.76 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 28 | 28 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.6 | 3.5 | ug/kg | |
| 100-41-4 | Ethylbenzene | 2.8 | 2.2 | 0.14 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.6 | 5.6 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.6 | 1.2 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.6 | 0.18 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.6 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.2 | 0.69 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.6 | 0.94 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.6 | 0.34 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.2 | 0.40 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.6 | 5.6 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.6 | 0.18 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.6 | 0.56 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.6 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.2 | 0.19 | ug/kg | |
| 108-88-3 | Toluene | 7.2 | 5.6 | 0.20 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.6 | 1.2 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.6 | 5.6 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.2 | 0.28 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.2 | 0.22 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.2 | 1.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.6 | 0.23 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.2 | 5.6 | 0.18 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.6 | 0.20 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.6 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.2 | 0.72 | ug/kg | UJ |
| | m,p-Xylene | ND | 2.2 | 0.28 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.2 | 0.21 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.2 | 0.14 | ug/kg | UJ |

ND = Not detected MDL - Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SVE7 (12.5-15)092111 DUP | | |
| **Lab Sample ID:** | MC3835-3 | **Date Sampled:** | 09/21/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/22/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | 92.2 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE7 (12.5-15)092111 DUP | | |
| Lab Sample ID: | MC3835-3 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8015 | Percent Solids: | 92.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24117.D | 1 | 09/24/11 | WS | n/a | n/a | GBH1324 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.61 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 14.3 | 15 | 2.9 | mg/kg | J |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 91% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE7 (12.5-15)092111 DUP | | |
| Lab Sample ID: | MC3835-3 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 92.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31426.D | 1 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.2 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 18 | 14 | mg/kg | |
| | TPH (>C28-C40) | ND | 18 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 96% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE30 (25-27.5)092111 | | |
| Lab Sample ID: | MC3835-4 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 93.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55086.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 2.64 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 1000 | 240 | ug/kg | |
| 107-02-8 | Acrolein | ND | 5100 | 3500 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 1000 | 410 | ug/kg | |
| 71-43-2 | Benzene | ND | 100 | 26 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 1000 | 39 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 1000 | 210 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 410 | 43 | ug/kg | |
| 75-25-2 | Bromoform | ND | 410 | 97 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 410 | 140 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 1000 | 240 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 1000 | 260 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 68.7 | 1000 | 34 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 1000 | 130 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 1000 | 200 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 410 | 46 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 410 | 19 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 1000 | 53 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 1000 | 1000 | ug/kg | |
| 67-66-3 | Chloroform | ND | 410 | 31 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 1000 | 44 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 1000 | 29 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 1000 | 230 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1000 | 1000 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 410 | 130 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 410 | 39 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 410 | 31 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 410 | 30 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 410 | 29 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 410 | 70 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 410 | 31 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 410 | 30 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 410 | 65 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE30 (25-27.5)092111 | | |
| Lab Sample ID: | MC3835-4 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 93.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 410 | 56 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 410 | 52 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 410 | 47 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 1000 | 240 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 1000 | 38 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 1000 | 40 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 410 | 210 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 410 | 140 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 5100 | 5100 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 1000 | 640 | ug/kg | |
| 100-41-4 | Ethylbenzene | 334 | 410 | 27 | ug/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 1000 | 1000 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 1000 | 220 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 116 | 1000 | 33 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | ND | 1000 | 33 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 410 | 130 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 1000 | 170 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 1000 | 63 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 410 | 74 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 1000 | 1000 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 267 | 1000 | 33 | ug/kg | J |
| 100-42-5 | Styrene | ND | 1000 | 100 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1000 | 210 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 410 | 36 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 410 | 35 | ug/kg | |
| 108-88-3 | Toluene | 113 | 1000 | 37 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1000 | 230 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1000 | 1000 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 410 | 38 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 410 | 52 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 410 | 40 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 410 | 190 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1000 | 43 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1130 | 1000 | 32 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 329 | 1000 | 37 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 1000 | 240 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 410 | 130 | ug/kg | |
| | m,p-Xylene | 845 | 410 | 52 | ug/kg | |
| 95-47-6 | o-Xylene | 306 | 410 | 38 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 1150 | 410 | 26 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE30 (25-27.5)092111 | | |
| Lab Sample ID: | MC3835-4 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 93.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 96% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 106% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 110% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE30 (25-27.5)092111 | | |
| Lab Sample ID: | MC3835-4 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8015 | Percent Solids: | 93.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24118.D | 1 | 09/25/11 | WS | n/a | n/a | GBH1324 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 2.64 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 61.2 | 21 | 3.9 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 99% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE30 (25-27.5)092111 | | |
| Lab Sample ID: | MC3835-4 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 93.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31428.D | I | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.4 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 16.1 | 17 | 13 | mg/kg | J |
| | TPH (>C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 78% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE9 092111 EB | | |
| Lab Sample ID: | MC3835-5 | Date Sampled: | 09/21/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M43752.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE9 092111 EB | | |
| Lab Sample ID: | MC3835-5 | Date Sampled: | 09/21/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE9 092111 EB | | |
| Lab Sample ID: | MC3835-5 | Date Sampled: | 09/21/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 95% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 92% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.5

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE9 092111 EB | | |
| Lab Sample ID: | MC3835-5 | Date Sampled: | 09/21/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/22/11 |
| Method: | SW846 8015 | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24332.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1336 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 0.10 | 0.070 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 89% | | 60-126% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE9 092111 EB | | |
| Lab Sample ID: | MC3835-5 | Date Sampled: | 09/21/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/22/11 |
| Method: | SW846-8015 SW846 3510C | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31417.D | 1 | 10/05/11 | KD | 09/28/11 | OP26420 | GBG1125 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 1000 ml | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 0.20 | 0.14 | mg/l | |
| | TPH (>C28-C40) | ND | 0.20 | 0.14 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 72% | | 33-150% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB 092111 | | |
| Lab Sample ID: | MC3835-6 | Date Sampled: | 09/21/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M43749.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB 092111 | | |
| Lab Sample ID: | MC3835-6 | Date Sampled: | 09/21/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB 092111 | | |
| Lab Sample ID: | MC3835-6 | Date Sampled: | 09/21/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 92% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 92% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

MC3835

# Shell Oil Products Chain Of Custody Record

URS

LAB (LOCATION)
- ☐ XENCO ( )
- ☐ CALSCIENCE ( )
- ☑ OTHER Accutest Labs; 495 Technology Ctr W
- ☐ Lab Vendor # ( )
- ☐ SPL ( )

Lab Vendor #

Please Check Appropriate Box:
- ☑ ENV. SERVICES
- ☐ MOTIVA RETAIL
- ☐ SHELL RETA
- ☐ MOTIVA SDACH
- ☐ CONSULTANT
- ☐ LUBES
- ☐ SHELL PIPELINE
- ☐ OTHER

Print Bill To Contact Name: Jeff Adams

PO #

INCIDENT # (ENV SERVICES): 0 7 2 1 0 0 4 0

SAP #: 3 4 0 0 8 1

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 9/21/11

PAGE: 1 of 1

SAMPLING COMPANY: URS CORPORATION

LOG CODE:

SITE ADDRESS: Street and City: 170 EAST RAND AVENUE – HARTFORD

State: IL

GLOBAL ID NO:

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110

TOP DELIVERABLE TO (Name, Company, Office Location):

PHONE NO:

E-MAIL:

CONSULTANT PROJECT NO: Roxana SVE Install 2011 / 21562593.00014

PROJECT CONTACT (Hardcopy or PDF Report to): Elizabeth Kunkel

TELEPHONE: 314-743-4179

FAX: 314-429-0462

BILL TO CONSULT E-MAIL: elizabeth_kunkel@urscorp.com

SAMPLER NAME(S) (Print): Skip Wrightson / Lindsay Rathnow

LAB USE ONLY

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

REQUESTED ANALYSIS

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY:

DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C° Cooler #1 Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
* Please include "J" values on Reports.
* Please provide sample receipt upon login.

MC3835

- ☑ SHELL CONTRACT RATE APPLIES
- ☐ STATE REIMBURSEMENT RATE APPLIES
- ☐ EDD NOT NEEDED
- ☑ RECEIPT VERIFICATION REQUESTED
- ☐ PROVIDE LEDD DISK

FIELD NOTES:

TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE HCL | HNO3 | H2SO4 | CHOCH | NaHSO4 | MONE | OTHER | # of Cont | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SVE 31 (20-22.5) 092111 | 9/21/11 | 1445 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 2 | SVE 07 (12.5-15) 092111 | 9/21/11 | 1905 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 3 | SVE 07 (12.5-15) 092111 Dup | 9/21/11 | 1905 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 4 | SVE 30 (25-27.5) 092111 | 9/21/11 | 1320 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 5 | SVE 07 092111 EB | 9/21/11 | 1525 | Water | 4 | | | | | 2 | | 6 | X | X | | |
| 6 | TB 9921111 | 9/21/11 | — | Water | 1 | | | | | | | 1 | X | | | |

Loc 12E, 16BB, 10E4, TB6, 1B5

| Relinquished by (Signature) | Received by (Signature) | Date | Time |
|---|---|---|---|
| [signature] 9/21/11 1820 | FedEx | | |
| FedEx FO | [signature] | 9/22/11 | 8:00 |
| | | | 1.9 |

05/2/08 Revision

4.1

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MC3835: Chain of Custody
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# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC3835 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 9/22/2011 Delivery Method: Client Service Action Required at Login: No

Project: HART No. Coolers: 1 Airbill #'s:

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2. Custody Seals Intact: | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification: | Infared gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservatio | Y or N | N/A |
|---|---|---|
| 1. Trip Blank present / cooler: | ☐ ☐ | ☑ |
| 2. Trip Blank listed on COC: | ☐ ☐ | ☑ |
| 3. Samples preserved properly: | ☑ ☐ | |
| 4. VOCs headspace free: | ☐ ☐ | ☑ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles: | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree: | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1. Sample recvd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3. Condition of sample: | Intact |

| Sample Integrity - Instructions | Y or N | N/A |
|---|---|---|
| 1. Analysis requested is clear: | ☑ ☐ | |
| 2. Bottles received for unspecified tests | ☐ ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ ☐ | |
| 4. Compositing instructions clear: | ☐ ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ ☐ | ☑ |

Comments

Accutest Laboratories
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495 Technology Center West, Bldg One
F: 508 481 7753
Marlborough, MA
www.accutest.com

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**MC3835: Chain of Custody**
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# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3835

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3835-1 Collected: 21-SEP-11 14:45 By: SWLR Received: 22-SEP-11 By: SAP<br>SVE31 (20-22.5)092111 | | | | | | |
| MC3835-1 | SM21 2540 B MOD. | 23-SEP-11 | HS | | | %SOL |
| MC3835-1 | SW846 8015 | 24-SEP-11 22:28 | WS | | | V8015GRO |
| MC3835-1 | SW846 8260B | 28-SEP-11 21:36 | GK | | | V8260SL |
| MC3835-1 | SW846-8015 | 05-OCT-11 15:02 | KD | 26-SEP-11 | MS | B8015DROORO |
| MC3835-2 Collected: 21-SEP-11 14:05 By: SWLR Received: 22-SEP-11 By: SAP<br>SVE9 (12.5-15)092111 | | | | | | |
| MC3835-2 | SM21 2540 B MOD. | 23-SEP-11 | HS | | | %SOL |
| MC3835-2 | SW846 8015 | 24-SEP-11 23:08 | WS | | | V8015GRO |
| MC3835-2 | SW846 8260B | 28-SEP-11 19:19 | GK | | | V8260SL |
| MC3835-2 | SW846-8015 | 05-OCT-11 06:35 | KD | 26-SEP-11 | MS | B8015DROORO |
| MC3835-3 Collected: 21-SEP-11 09:05 By: SWLR Received: 22-SEP-11 By: SAP<br>SVE7 (12.5-15)092111 DUP | | | | | | |
| MC3835-3 | SM21 2540 B MOD. | 23-SEP-11 | HS | | | %SOL |
| MC3835-3 | SW846 8015 | 24-SEP-11 23:48 | WS | | | V8015GRO |
| MC3835-3 | SW846 8260B | 29-SEP-11 14:53 | AMY | | | V8260SL |
| MC3835-3 | SW846-8015 | 05-OCT-11 07:22 | KD | 26-SEP-11 | MS | B8015DROORO |
| MC3835-4 Collected: 21-SEP-11 13:20 By: SWLR Received: 22-SEP-11 By: SAP<br>SVE30 (25-27.5)092111 | | | | | | |
| MC3835-4 | SM21 2540 B MOD. | 23-SEP-11 | HS | | | %SOL |
| MC3835-4 | SW846 8015 | 25-SEP-11 00:28 | WS | | | V8015GRO |
| MC3835-4 | SW846 8260B | 28-SEP-11 19:46 | GK | | | V8260SL |
| MC3835-4 | SW846-8015 | 05-OCT-11 08:54 | KD | 26-SEP-11 | MS | B8015DROORO |
| MC3835-5 Collected: 21-SEP-11 15:25 By: SWLR Received: 22-SEP-11 By: SAP<br>SVE9 092111 EB | | | | | | |
| MC3835-5 | SW846 8015 | 04-OCT-11 14:45 | WS | | | V8015GRO |
| MC3835-5 | SW846 8260B | 04-OCT-11 14:59 | JP | | | V8260SL |
| MC3835-5 | SW846-8015 | 05-OCT-11 00:24 | KD | 28-SEP-11 | FC | B8015DROORO |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3835

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3835-6 TB 092111 | Collected: 21-SEP-11 00:00 By: SWLR | | Received: 22-SEP-11 By: SAP | | | |
| MC3835-6 | SW846 8260B | 04-OCT-11 13:31 | JP | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/22/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3835-1.1 | Walk In Ref #9 | Mehdi Abdolrahim | 09/23/11 16:47 | Retrieve from Storage |
| MC3835-1.1 | Mehdi Abdolrahim | Walk In Ref #9 | 09/23/11 17:43 | Return to Storage |
| MC3835-1.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3835-1.2 | Walk In Ref #9 | Mahmoud Afzali | 09/26/11 15:55 | Retrieve from Storage |
| MC3835-1.2 | Mahmoud Afzali | Walk In Ref #9 | 09/27/11 09:43 | Return to Storage |
| MC3835-1.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3835-1.3 | VOC Ref #10 | Gary Krasinski | 09/27/11 15:16 | Retrieve from Storage |
| MC3835-1.3 | Gary Krasinski | VOC Ref #10 | 09/29/11 10:59 | Return to Storage |
| MC3835-1.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3835-2.1 | Walk In Ref #9 | Mehdi Abdolrahim | 09/23/11 16:47 | Retrieve from Storage |
| MC3835-2.1 | Mehdi Abdolrahim | Walk In Ref #9 | 09/23/11 17:43 | Return to Storage |
| MC3835-2.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3835-2.2 | Walk In Ref #9 | Mahmoud Afzali | 09/26/11 15:55 | Retrieve from Storage |
| MC3835-2.2 | Mahmoud Afzali | Walk In Ref #9 | 09/27/11 09:43 | Return to Storage |
| MC3835-2.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3835-2.4 | VOC Ref #10 | Gary Krasinski | 09/27/11 15:16 | Retrieve from Storage |
| MC3835-2.4 | Gary Krasinski | VOC Ref #10 | 09/29/11 10:59 | Return to Storage |
| MC3835-2.4 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3835-3.1 | Walk In Ref #9 | Mehdi Abdolrahim | 09/23/11 16:47 | Retrieve from Storage |
| MC3835-3.1 | Mehdi Abdolrahim | Walk In Ref #9 | 09/23/11 17:43 | Return to Storage |
| MC3835-3.1 | Walk In Ref #9 | Mahmoud Afzali | 09/26/11 15:55 | Retrieve from Storage |
| MC3835-3.1 | Mahmoud Afzali | Walk In Ref #9 | 09/27/11 09:43 | Return to Storage |
| MC3835-3.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3835-3.2 | Walk In Ref #9 | Mahmoud Afzali | 09/26/11 15:55 | Retrieve from Storage |
| MC3835-3.2 | Mahmoud Afzali | Walk In Ref #9 | 09/27/11 09:43 | Return to Storage |
| MC3835-3.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3835-3.4 | VOC Ref #10 | Gary Krasinski | 09/27/11 15:16 | Retrieve from Storage |
| MC3835-3.4 | Gary Krasinski | VOC Ref #10 | 09/28/11 10:36 | Return to Storage |
| MC3835-3.4 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3835-3.6 | VOC Ref #10 | Amy Min Yang | 09/28/11 11:12 | Retrieve from Storage |
| MC3835-3.6 | Amy Min Yang | GCMSV | 09/28/11 11:12 | Load on Instrument |
| MC3835-3.6 | GCMSV | Amy Min Yang | 10/04/11 17:33 | Unload from Instrument |
| MC3835-3.6 | Amy Min Yang | VOC Ref #10 | 10/04/11 17:33 | Return to Storage |
| MC3835-3.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |

# Accutest Internal Chain of Custody



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/22/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3835-4.1 | Walk In Ref #9 | Mehdi Abdolrahim | 09/23/11 16:47 | Retrieve from Storage |
| MC3835-4.1 | Mehdi Abdolrahim | Walk In Ref #9 | 09/23/11 17:43 | Return to Storage |
| MC3835-4.1 | Walk In Ref #9 | Mahmoud Afzali | 09/26/11 15:55 | Retrieve from Storage |
| MC3835-4.1 | Mahmoud Afzali | Walk In Ref #9 | 09/27/11 09:43 | Return to Storage |
| MC3835-4.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3835-4.3 | VOC Ref #10 | Gary Krasinski | 09/27/11 15:16 | Retrieve from Storage |
| MC3835-4.3 | Gary Krasinski | VOC Ref #10 | 09/29/11 10:59 | Return to Storage |
| MC3835-4.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3835-5.1 | Walk In Ref #22 | Michael Rolo | 09/28/11 15:46 | Retrieve from Storage |
| MC3835-5.1 | Michael Rolo | | 09/29/11 01:05 | Depleted |
| MC3835-5.3 | VOC Ref #1 | William Shao | 10/04/11 10:42 | Retrieve from Storage |
| MC3835-5.3 | William Shao | GCBH | 10/04/11 10:42 | Load on Instrument |
| MC3835-5.3 | GCBH | William Shao | 10/04/11 10:43 | Unload from Instrument |
| MC3835-5.3 | William Shao | VOC Ref #1 | 10/04/11 10:43 | Return to Storage |
| MC3835-5.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3835-5.6 | VOC Ref #1 | Dana Tyron | 10/04/11 10:59 | Retrieve from Storage |
| MC3835-5.6 | Dana Tyron | GCMSM | 10/04/11 10:59 | Load on Instrument |
| MC3835-5.6 | GCMSM | Jugal Patel | 10/06/11 09:50 | Unload from Instrument |
| MC3835-5.6 | Jugal Patel | VOC Ref #1 | 10/06/11 09:50 | Return to Storage |
| MC3835-5.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3835-6.1 | VOC Ref #1 | Dana Tyron | 10/04/11 10:59 | Retrieve from Storage |
| MC3835-6.1 | Dana Tyron | GCMSM | 10/04/11 10:59 | Load on Instrument |
| MC3835-6.1 | GCMSM | Jugal Patel | 10/06/11 09:50 | Unload from Instrument |
| MC3835-6.1 | Jugal Patel | VOC Ref #1 | 10/06/11 09:50 | Return to Storage |
| MC3835-6.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |

New England ACCUTEST LABORATORIES



## GC/MS Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1840-MB | K55069.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-1, MC3835-2, MC3835-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 58 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 850 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 250 | 100 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 6.3 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 9.5 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 52 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 10 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 24 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 34 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 59 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 63 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 8.3 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 33 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 48 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 11 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 4.7 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 13 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 250 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 7.4 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 11 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 7.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 56 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 250 | 250 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 33 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 100 | 9.6 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 7.5 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 7.2 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 7.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 17 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 7.6 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 7.3 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 16 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 13 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 11 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 58 | ug/kg | |

# Method Blank Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1840-MB | K55069.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-1, MC3835-2, MC3835-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 9.2 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 9.6 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 50 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 34 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 160 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 6.5 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 250 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 52 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 7.9 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.1 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 31 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 42 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 15 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 18 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 250 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 8.1 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 25 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 8.8 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 8.4 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 9.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 55 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 250 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 9.2 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 13 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 9.8 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 46 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 10 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 7.9 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 9.1 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 59 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 32 | ug/kg | |
| | m,p-Xylene | ND | 100 | 13 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 9.2 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 6.3 | ug/kg | |

# Method Blank Summary

Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1840-MB | K55069.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-1, MC3835-2, MC3835-4

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 109% | 70-130% |
| 2037-26-5 | Toluene-D8 | 106% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 112% | 70-130% |

# Method Blank Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV95-MB | V2166.D | 1 | 09/29/11 | AMY | n/a | n/a | MSV95 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary

Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV95-MB | V2166.D | 1 | 09/29/11 | AMY | n/a | n/a | MSV95 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV95-MB | V2166.D | 1 | 09/29/11 | AMY | n/a | n/a | MSV95 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-3

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 91% | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 93% | 70-130% |

# Method Blank Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1414-MB | M43747.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-5, MC3835-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |

# Method Blank Summary

Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1414-MB | M43747.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-5, MC3835-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

# Method Blank Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1414-MB | M43747.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-5, MC3835-6

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 91% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 93% | 70-130% |

# Blank Spike Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV95-BS | V2167.D | 1 | 09/29/11 | AMY | n/a | n/a | MSV95 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 53.3 | 107 | 70-130 |
| 107-02-8 | Acrolein | 250 | 784 | 314* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 286 | 572* a | 70-130 |
| 71-43-2 | Benzene | 50 | 53.1 | 106 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 48.3 | 97 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 48.8 | 98 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 49.1 | 98 | 70-130 |
| 75-25-2 | Bromoform | 50 | 47.0 | 94 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 40.6 | 81 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 54.6 | 109 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 55.1 | 110 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 51.3 | 103 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 49.1 | 98 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 41.6 | 83 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 44.0 | 88 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 55.6 | 111 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 46.9 | 94 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 22.1 | 44 | 10-160 |
| 67-66-3 | Chloroform | 50 | 49.3 | 99 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 34.9 | 70 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 48.0 | 96 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 49.2 | 98 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 48.5 | 97 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 49.9 | 100 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 51.3 | 103 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 53.5 | 107 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 49.8 | 100 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 48.8 | 98 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 39.7 | 79 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 53.2 | 106 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 48.6 | 97 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 48.8 | 98 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 49.9 | 100 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 49.1 | 98 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 52.0 | 104 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 50.2 | 100 | 70-130 |

# Blank Spike Summary

Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV95-BS | V2167.D | 1 | 09/29/11 | AMY | n/a | n/a | MSV95 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 54.7 | 109 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 48.3 | 97 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 54.1 | 108 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 56.4 | 113 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 282 | 113 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 53.5 | 107 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 54.9 | 110 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 50.0 | 100 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 62.4 | 125 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 58.2 | 116 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 53.0 | 106 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 52.1 | 104 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 58.7 | 117 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 50.1 | 100 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 53.9 | 108 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 55.1 | 110 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 50.8 | 102 | 70-130 |
| 100-42-5 | Styrene | 50 | 55.3 | 111 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 51.9 | 104 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 52.2 | 104 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 50.4 | 101 | 70-130 |
| 108-88-3 | Toluene | 50 | 49.9 | 100 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 53.0 | 106 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 55.2 | 110 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 47.2 | 94 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 49.3 | 99 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 48.6 | 97 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 39.1 | 78 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 51.0 | 102 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 49.4 | 99 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 49.4 | 99 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 43.1 | 86 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 32.1 | 64* b | 70-130 |
| | m,p-Xylene | 100 | 112 | 112 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 54.9 | 110 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 167 | 111 | 70-130 |

# Blank Spike Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV95-BS | V2167.D | 1 | 09/29/11 | AMY | n/a | n/a | MSV95 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-3

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 96% | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits. Blank Spike meets program technical requirements.

# Blank Spike Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1414-BS | M43744.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-5, MC3835-6

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 64.3 | 129 | 70-130 |
| 107-02-8 | Acrolein | 250 | 254 | 102 | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 198 | 396* [a] | 70-130 |
| 71-43-2 | Benzene | 50 | 52.1 | 104 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 56.8 | 114 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 55.4 | 111 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 59.2 | 118 | 70-130 |
| 75-25-2 | Bromoform | 50 | 53.8 | 108 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 52.9 | 106 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 63.9 | 128 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 56.1 | 112 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 55.5 | 111 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 53.1 | 106 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 51.7 | 103 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 68.5 | 137* [b] | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 57.3 | 115 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 51.0 | 102 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 21.6 | 43* [b] | 70-130 |
| 67-66-3 | Chloroform | 50 | 54.6 | 109 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 45.9 | 92 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 50.7 | 101 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 53.2 | 106 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 45.0 | 90 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 61.2 | 122 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 56.3 | 113 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 54.6 | 109 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 55.7 | 111 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 53.8 | 108 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 62.2 | 124 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 52.7 | 105 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 59.9 | 120 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 57.2 | 114 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 53.1 | 106 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 55.3 | 111 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 54.5 | 109 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 51.8 | 104 | 70-130 |

# Blank Spike Summary

Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1414-BS | M43744.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-5, MC3835-6

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 66.7 | 133* b | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 60.1 | 120 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 53.7 | 107 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 58.3 | 117 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 186 | 74 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 48.3 | 97 | 77-137 |
| 100-41-4 | Ethylbenzene | 50 | 56.4 | 113 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 77.7 | 155* b | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 55.9 | 112 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 61.0 | 122 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 57.8 | 116 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 48.6 | 97 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 43.9 | 88 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 55.9 | 112 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 52.3 | 105 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 47.0 | 94 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 53.0 | 106 | 70-130 |
| 100-42-5 | Styrene | 50 | 55.2 | 110 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 60.7 | 121 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 43.1 | 86 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 65.9 | 132* b | 70-130 |
| 108-88-3 | Toluene | 50 | 57.9 | 116 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 57.3 | 115 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 61.5 | 123 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 60.0 | 120 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 55.5 | 111 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 58.0 | 116 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 59.0 | 118 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 44.2 | 88 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 52.1 | 104 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 51.5 | 103 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 34.1 | 68* b | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 46.0 | 92 | 70-130 |
| | m,p-Xylene | 100 | 120 | 120 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 59.0 | 118 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 179 | 119 | 70-130 |

# Blank Spike Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1414-BS | M43744.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-5, MC3835-6

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 90% | 70-130% |
| 2037-26-5 | Toluene-D8 | 100% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits. Blank Spike meets program technical requirements.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1840-BS | K55067.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| MSK1840-BSD | K55068.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-1, MC3835-2, MC3835-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 2330 | 93 | 2650 | 106 | 13 | 70-130/25 |
| 107-02-8 | Acrolein | 12500 | 15000 | 120 | 14700 | 118 | 2 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 2500 | 2300 | 92 | 2490 | 100 | 8 | 70-130/25 |
| 71-43-2 | Benzene | 2500 | 2430 | 97 | 2370 | 95 | 3 | 70-130/25 |
| 108-86-1 | Bromobenzene | 2500 | 2470 | 99 | 2430 | 97 | 2 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 2500 | 2440 | 98 | 2420 | 97 | 1 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 2500 | 2470 | 99 | 2460 | 98 | 0 | 70-130/25 |
| 75-25-2 | Bromoform | 2500 | 2580 | 103 | 2730 | 109 | 6 | 70-130/25 |
| 74-83-9 | Bromomethane | 2500 | 2450 | 98 | 2270 | 91 | 8 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 2530 | 101 | 2840 | 114 | 12 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 2500 | 2540 | 102 | 2420 | 97 | 5 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2530 | 101 | 2400 | 96 | 5 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2440 | 98 | 2330 | 93 | 5 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 2500 | 2610 | 104 | 2470 | 99 | 6 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2460 | 98 | 2370 | 95 | 4 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 2500 | 2590 | 104 | 2550 | 102 | 2 | 70-130/25 |
| 75-00-3 | Chloroethane | 2500 | 2630 | 105 | 2490 | 100 | 5 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 1520 | 61 | 1630 | 65 | 7 | 10-160/25 |
| 67-66-3 | Chloroform | 2500 | 2390 | 96 | 2340 | 94 | 2 | 70-130/25 |
| 74-87-3 | Chloromethane | 2500 | 2370 | 95 | 2220 | 89 | 7 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2410 | 96 | 2310 | 92 | 4 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2490 | 100 | 2390 | 96 | 4 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 2500 | 2050 | 82 | 2190 | 88 | 7 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 2500 | 2680 | 107 | 2720 | 109 | 1 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 2500 | 2570 | 103 | 2650 | 106 | 3 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2510 | 100 | 2480 | 99 | 1 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2500 | 100 | 2450 | 98 | 2 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2470 | 99 | 2440 | 98 | 1 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 2440 | 98 | 2290 | 92 | 6 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2410 | 96 | 2340 | 94 | 3 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2310 | 92 | 2340 | 94 | 1 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2570 | 103 | 2460 | 98 | 4 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2360 | 94 | 2290 | 92 | 3 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2500 | 100 | 2380 | 95 | 5 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2390 | 96 | 2370 | 95 | 1 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2420 | 97 | 2550 | 102 | 5 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1840-BS | K55067.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| MSK1840-BSD | K55068.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-1, MC3835-2, MC3835-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2760 | 110 | 2560 | 102 | 8 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2520 | 101 | 2430 | 97 | 4 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2540 | 102 | 2510 | 100 | 1 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2660 | 106 | 2680 | 107 | 1 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 12500 | 10800 | 86 | 12800 | 102 | 17 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2410 | 96 | 2570 | 103 | 6 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 2500 | 2630 | 105 | 2580 | 103 | 2 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2400 | 96 | 2290 | 92 | 5 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 2500 | 2670 | 107 | 3110 | 124 | 15 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 2500 | 2890 | 116 | 2750 | 110 | 5 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2540 | 102 | 2450 | 98 | 4 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2310 | 92 | 2400 | 96 | 4 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 2330 | 93 | 2590 | 104 | 11 | 70-130/25 |
| 74-95-3 | Methylene bromide | 2500 | 2440 | 98 | 2460 | 98 | 1 | 70-130/25 |
| 75-09-2 | Methylene chloride | 2500 | 2510 | 100 | 2480 | 99 | 1 | 70-130/25 |
| 91-20-3 | Naphthalene | 2500 | 2120 | 85 | 2310 | 92 | 9 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 2500 | 2530 | 101 | 2410 | 96 | 5 | 70-130/25 |
| 100-42-5 | Styrene | 2500 | 2690 | 108 | 2660 | 106 | 1 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2630 | 105 | 2550 | 102 | 3 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2380 | 95 | 2520 | 101 | 6 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 2500 | 2700 | 108 | 2600 | 104 | 4 | 70-130/25 |
| 108-88-3 | Toluene | 2500 | 2530 | 101 | 2420 | 97 | 4 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 2100 | 84 | 2090 | 84 | 0 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2290 | 92 | 2320 | 93 | 1 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2440 | 98 | 2310 | 92 | 5 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2450 | 98 | 2480 | 99 | 1 | 70-130/25 |
| 79-01-6 | Trichloroethene | 2500 | 2490 | 100 | 2410 | 96 | 3 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2440 | 98 | 2280 | 91 | 7 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2370 | 95 | 2480 | 99 | 5 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2440 | 98 | 2370 | 95 | 3 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2460 | 98 | 2340 | 94 | 5 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 2500 | 1960 | 78 | 2010 | 80 | 3 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 2500 | 2340 | 94 | 2020 | 81 | 15 | 70-130/25 |
| | m,p-Xylene | 5000 | 5380 | 108 | 5240 | 105 | 3 | 70-130/25 |
| 95-47-6 | o-Xylene | 2500 | 2620 | 105 | 2540 | 102 | 3 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 7500 | 8000 | 107 | 7770 | 104 | 3 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, 1L

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1840-BS | K55067.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| MSK1840-BSD | K55068.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-1, MC3835-2, MC3835-4

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | 99% | 70-130% |
| 2037-26-5 | Toluene-D8 | 108% | 103% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 104% | 101% | 70-130% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3828-3MS | K55082.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| MC3828-3MSD | K55083.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| MC3828-3 | K55081.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-1, MC3835-2, MC3835-4

| CAS No. | Compound | MC3828-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 4550 | 6120 | 135* [a] | 5750 | 126 | 6 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 22700 | 31000 | 136* [a] | 31600 | 139* [a] | 2 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 4550 | 4930 | 108 | 4770 | 105 | 3 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 4550 | 4950 | 109 | 4750 | 104 | 4 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 4550 | 4920 | 108 | 4820 | 106 | 2 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 4550 | 4990 | 110 | 4770 | 105 | 5 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 4550 | 5070 | 112 | 4920 | 108 | 3 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 4550 | 5230 | 115 | 5140 | 113 | 2 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 4550 | 4680 | 103 | 4500 | 99 | 4 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 4550 | 6180 | 136* [a] | 6020 | 132* [a] | 3 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 4550 | 4910 | 108 | 4830 | 106 | 2 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 4550 | 4900 | 108 | 4780 | 105 | 2 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 4550 | 4830 | 106 | 4720 | 104 | 2 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 4550 | 5140 | 113 | 4970 | 109 | 3 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 4550 | 5030 | 111 | 4790 | 105 | 5 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 4550 | 5130 | 113 | 5030 | 111 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 4550 | 5180 | 114 | 4930 | 108 | 5 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 4550 | 3050 | 67 | 2960 | 65 | 3 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 4550 | 4960 | 109 | 4730 | 104 | 5 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 4550 | 4720 | 104 | 4710 | 104 | 0 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 4550 | 4720 | 104 | 4630 | 102 | 2 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 4550 | 4880 | 107 | 4830 | 106 | 1 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 4550 | 4450 | 98 | 4070 | 90 | 9 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 4550 | 5390 | 119 | 5310 | 117 | 1 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 4550 | 5240 | 115 | 5120 | 113 | 2 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 4550 | 4950 | 109 | 4920 | 108 | 1 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 4550 | 4940 | 109 | 4860 | 107 | 2 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 4550 | 4920 | 108 | 4820 | 106 | 2 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 4550 | 4910 | 108 | 4810 | 106 | 2 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 4550 | 4880 | 107 | 4750 | 104 | 3 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 4550 | 4990 | 110 | 4730 | 104 | 5 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 4550 | 5120 | 113 | 4980 | 110 | 3 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | 111 | J | 4550 | 4820 | 104 | 4680 | 100 | 3 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 4550 | 4910 | 108 | 4760 | 105 | 3 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 4550 | 4950 | 109 | 4780 | 105 | 3 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 4550 | 4960 | 109 | 4860 | 107 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3828-3MS | K55082.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| MC3828-3MSD | K55083.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| MC3828-3 | K55081.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-1, MC3835-2, MC3835-4

| CAS No. | Compound | MC3828-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 4550 | 5140 | 113 | 4920 | 108 | 4 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 4550 | 5030 | 111 | 4890 | 108 | 3 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 4550 | 5070 | 112 | 4900 | 108 | 3 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 4550 | 5440 | 120 | 5230 | 115 | 4 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 22700 | 24800 | 109 | 21300 | 94 | 15 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 4550 | 5080 | 112 | 4810 | 106 | 5 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 4550 | 5160 | 113 | 5110 | 112 | 1 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 4550 | 4830 | 106 | 4670 | 103 | 3 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 4550 | 7630 | 168* [a] | 7520 | 165* [a] | 1 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 4550 | 5690 | 125 | 5540 | 122 | 3 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 4550 | 4940 | 109 | 4870 | 107 | 1 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 4550 | 4760 | 105 | 4660 | 102 | 2 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 4550 | 5430 | 119 | 5100 | 112 | 6 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 4550 | 5100 | 112 | 4900 | 108 | 4 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 4550 | 5090 | 112 | 5000 | 110 | 2 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 4550 | 4470 | 98 | 4270 | 94 | 5 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 4550 | 4930 | 108 | 4810 | 106 | 2 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 4550 | 5280 | 116 | 5240 | 115 | 1 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 4550 | 5150 | 113 | 5140 | 113 | 0 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 4550 | 4020 | 88 | 3720 | 82 | 8 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | 195 | | 4550 | 5390 | 114 | 5310 | 112 | 1 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 4550 | 5110 | 112 | 4940 | 109 | 3 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 4550 | 4420 | 97 | 4170 | 92 | 6 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 4550 | 4620 | 102 | 4480 | 99 | 3 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 4550 | 4990 | 110 | 4750 | 104 | 5 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 4550 | 5040 | 111 | 4860 | 107 | 4 | 70-130/30 |
| 79-01-6 | Trichloroethene | 4020 | | 4550 | 10100 | 134* [a] | 9850 | 128 | 3 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 4550 | 4910 | 108 | 4710 | 104 | 4 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 4550 | 4790 | 105 | 4620 | 102 | 4 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 4550 | 4920 | 108 | 4810 | 106 | 2 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 4550 | 4820 | 106 | 4710 | 104 | 2 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 4550 | 473 | 10* [a] | 364 | 8* [a] | 26 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 4550 | 4020 | 88 | 4140 | 91 | 3 | 70-130/30 |
| | m,p-Xylene | ND | | 9090 | 10500 | 115 | 10400 | 114 | 1 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 4550 | 5140 | 113 | 5180 | 114 | 1 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 13600 | 15700 | 115 | 15500 | 114 | 1 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3828-3MS | K55082.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| MC3828-3MSD | K55083.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| MC3828-3 | K55081.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-1, MC3835-2, MC3835-4

| CAS No. | Surrogate Recoveries | MS | MSD | MC3828-3 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 103% | 97% | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 111% | 107% | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 107% | 103% | 105% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3903-7MS | V2182.D | 1 | 09/29/11 | AMY | n/a | n/a | MSV95 |
| MC3903-7MSD | V2183.D | 1 | 09/29/11 | AMY | n/a | n/a | MSV95 |
| MC3903-7 | V2180.D | 1 | 09/29/11 | AMY | n/a | n/a | MSV95 |
| MC3903-7 [a] | V2187.D | 1 | 09/29/11 | AMY | n/a | n/a | MSV95 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-3

| CAS No. | Compound | MC3903-7 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 208 | | 50.8 | 258 | 98 | 243 | 70 | 6 | 70-130/30 |
| 107-02-8 | Acrolein | 24 U [c] | | 254 | 1230 | 484* [b] | 969 | 388* [b] | 24 | 70-130/30 |
| 107-13-1 | Acrylonitrile | 4.9 U [c] | | 50.8 | 348 | 685* [b] | 265 | 531* [b] | 27 | 70-130/30 |
| 71-43-2 | Benzene | 0.48 U | | 50.8 | 73.7 | 145* [d] | 56.7 | 114 | 26 | 70-130/30 |
| 108-86-1 | Bromobenzene | 4.9 U [c] | | 50.8 | 72.2 | 142* [d] | 73.1 | 146* [d] | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | 4.9 U [c] | | 50.8 | 62.8 | 124 | 53.7 | 108 | 16 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | 1.9 U | | 50.8 | 56.0 | 110 | 49.0 | 98 | 13 | 70-130/30 |
| 75-25-2 | Bromoform | 1.9 U | | 50.8 | 38.3 | 75 | 42.7 | 85 | 11 | 70-130/30 |
| 74-83-9 | Bromomethane | 1.9 U | | 50.8 | 76.8 | 151* [d] | 57.4 | 115 | 29 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | 4.8 U | | 50.8 | 91.5 | 180* [d] | 83.5 | 167* [d] | 9 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | 4.9 U [c] | | 50.8 | 73.4 | 145* [d] | 82.6 | 165* [d] | 12 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | 4.9 U [c] | | 50.8 | 74.9 | 148* [d] | 77.5 | 155* [d] | 3 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | 4.9 U [c] | | 50.8 | 76.1 | 150* [d] | 77.6 | 155* [d] | 2 | 70-130/30 |
| 75-15-0 | Carbon disulfide | 2.4 | J | 50.8 | 74.4 | 142* [d] | 58.6 | 113 | 24 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | 1.9 U | | 50.8 | 60.5 | 119 | 47.8 | 96 | 23 | 70-130/30 |
| 108-90-7 | Chlorobenzene | 1.9 U | | 50.8 | 68.0 | 134* [d] | 59.1 | 118 | 14 | 70-130/30 |
| 75-00-3 | Chloroethane | 4.8 U | | 50.8 | 93.8 | 185* [d] | 68.5 | 137* [d] | 31* [e] | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 4.9 U [c] | | 50.8 | ND | 0* [d] | ND | 0* [d] | nc | 10-160/30 |
| 67-66-3 | Chloroform | 1.9 U | | 50.8 | 68.4 | 135* [d] | 55.0 | 110 | 22 | 70-130/30 |
| 74-87-3 | Chloromethane | 4.8 U | | 50.8 | 81.9 | 161* [d] | 60.6 | 121 | 30 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | 4.9 U [c] | | 50.8 | 75.2 | 148* [d] | 76.0 | 152* [d] | 1 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | 4.9 U [c] | | 50.8 | 74.8 | 147* [d] | 75.3 | 151* [d] | 1 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 4.9 U [c] | | 50.8 | 47.6 | 94 | 60.4 | 121 | 24 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | 1.9 U | | 50.8 | 54.9 | 108 | 55.8 | 112 | 2 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | 1.9 U [c] | | 50.8 | 65.4 | 129 | 62.6 | 125 | 4 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | 1.9 U | | 50.8 | 55.7 | 110 | 59.5 | 119 | 7 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | 1.9 U | | 50.8 | 58.3 | 115 | 62.1 | 124 | 6 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | 1.9 U | | 50.8 | 56.2 | 111 | 59.4 | 119 | 6 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | 1.9 U [c] | | 50.8 | 74.6 | 147* [d] | 58.6 | 117 | 24 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | 1.9 U | | 50.8 | 78.9 | 155* [d] | 62.5 | 125 | 23 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | 1.9 U | | 50.8 | 67.7 | 133* [d] | 55.5 | 111 | 20 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | 1.9 U | | 50.8 | 81.1 | 160* [d] | 61.6 | 123 | 27 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | 1.9 U | | 50.8 | 67.1 | 132* [d] | 54.1 | 108 | 21 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | 1.9 U | | 50.8 | 73.0 | 144* [d] | 56.5 | 113 | 25 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | 1.9 U | | 50.8 | 66.4 | 131* [d] | 54.0 | 108 | 21 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | 4.9 U [c] | | 50.8 | 69.6 | 137* [d] | 63.8 | 128 | 9 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3903-7MS | V2182.D | 1 | 09/29/11 | AMY | n/a | n/a | MSV95 |
| MC3903-7MSD | V2183.D | 1 | 09/29/11 | AMY | n/a | n/a | MSV95 |
| MC3903-7 | V2180.D | 1 | 09/29/11 | AMY | n/a | n/a | MSV95 |
| MC3903-7 [a] | V2187.D | 1 | 09/29/11 | AMY | n/a | n/a | MSV95 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-3

| CAS No. | Compound | MC3903-7 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 4.9 U [c] | | 50.8 | 72.1 | 142* [d] | 59.0 | 118 | 20 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | 4.9 U [c] | | 50.8 | 68.5 | 135* [d] | 52.6 | 105 | 26 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | 1.9 U | | 50.8 | 53.5 | 105 | 50.1 | 100 | 7 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | 1.9 U | | 50.8 | 52.9 | 104 | 51.2 | 103 | 3 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | 24 U [c] | | 254 | 455 | 179* [d] | 444 | 178* [d] | 2 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | 4.9 U [c] | | 50.8 | 65.4 | 129 | 61.4 | 123 | 6 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 1.9 U | | 50.8 | 70.3 | 138* [d] | 60.5 | 121 | 15 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | 4.8 U | | 50.8 | 44.4 | 87 | 54.8 | 110 | 21 | 70-130/30 |
| 591-78-6 | 2-Hexanone | 4.8 U | | 50.8 | 106 | 209* [d] | 105 | 210* [d] | 1 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | 4.9 U [c] | | 50.8 | 104 | 205* [d] | 103 | 206* [d] | 1 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | 1.3 [c] | J | 50.8 | 77.2 | 149* [d] | 82.1 | 162* [d] | 6 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | 1.9 U | | 50.8 | 69.3 | 136* [d] | 62.6 | 125 | 10 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 4.8 U | | 50.8 | 92.9 | 183* [d] | 86.2 | 173* [d] | 7 | 70-130/30 |
| 74-95-3 | Methylene bromide | 4.9 U [c] | | 50.8 | 63.6 | 125 | 53.5 | 107 | 17 | 70-130/30 |
| 75-09-2 | Methylene chloride | 1.9 U | | 50.8 | 77.8 | 153* [d] | 62.0 | 124 | 23 | 70-130/30 |
| 91-20-3 | Naphthalene | 4.9 U [c] | | 50.8 | 17.6 | 35* [d] | 27.2 | 54* [d] | 43* [e] | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 4.9 U [c] | | 50.8 | 85.4 | 168* [d] | 85.3 | 171* [d] | 0 | 70-130/30 |
| 100-42-5 | Styrene | 4.8 U | | 50.8 | 50.8 | 100 | 47.0 | 94 | 8 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 4.9 U [c] | | 50.8 | 60.4 | 119 | 55.3 | 111 | 9 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.9 U | | 50.8 | 93.9 | 185* [d] | 95.5 | 191* [d] | 2 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | 1.9 U | | 50.8 | 66.2 | 130 | 56.8 | 114 | 15 | 70-130/30 |
| 108-88-3 | Toluene | 8.0 | | 50.8 | 66.6 | 115 | 51.0 | 86 | 27 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 4.9 U [c] | | 50.8 | 20.8 | 41* [d] | 27.3 | 55* [d] | 27 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 4.9 U [c] | | 50.8 | 26.9 | 53* [d] | 36.1 | 72 | 29 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | 1.9 U | | 50.8 | 64.6 | 127 | 52.2 | 105 | 21 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | 1.9 U | | 50.8 | 58.1 | 114 | 49.7 | 100 | 16 | 70-130/30 |
| 79-01-6 | Trichloroethene | 1.9 U | | 50.8 | 63.7 | 125 | 49.8 | 100 | 24 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | 1.9 U | | 50.8 | 66.9 | 132* [d] | 51.6 | 103 | 26 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | 4.9 U [c] | | 50.8 | 91.5 | 180* [d] | 99.5 | 199* [d] | 8 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 4.9 U [c] | | 50.8 | 71.4 | 141* [d] | 73.6 | 147* [d] | 3 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 4.9 U [c] | | 50.8 | 74.1 | 146* [d] | 76.1 | 152* [d] | 3 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | 4.9 U [c] | | 50.8 | 65.5 | 129 | 58.5 | 117 | 11 | 70-130/30 |
| 75-01-4 | Vinyl chloride | 1.9 U | | 50.8 | 70.3 | 138* [d] | 53.3 | 107 | 28 | 70-130/30 |
| | m,p-Xylene | 1.9 U [c] | | 102 | 137 | 135* [d] | 119 | 119 | 14 | 70-130/30 |
| 95-47-6 | o-Xylene | 1.9 U [c] | | 50.8 | 62.6 | 123 | 56.2 | 113 | 11 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 1.9 U | | 152 | 200 | 131* [d] | 175 | 117 | 13 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3903-7MS | V2182.D | 1 | 09/29/11 | AMY | n/a | n/a | MSV95 |
| MC3903-7MSD | V2183.D | 1 | 09/29/11 | AMY | n/a | n/a | MSV95 |
| MC3903-7 | V2180.D | 1 | 09/29/11 | AMY | n/a | n/a | MSV95 |
| MC3903-7 [a] | V2187.D | 1 | 09/29/11 | AMY | n/a | n/a | MSV95 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-3

| CAS No. | Surrogate Recoveries | MS | MSD | MC3903-7 | MC3903-7 | Limits |
|---|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | 104% | 106% | 106% | 70-130% |
| 2037-26-5 | Toluene-D8 | 91% | 90% | 88% | 89% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 124% | 134%* [g] | 132%* [f] | 137%* [f] | 70-130% |

(a) Confirmation run.
(b) Outside control limits. Associated samples are non-detect for this compound.
(c) Result is from Run #2.
(d) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(e) High RPD due to possible matrix interference and/or sample non-homogeneity.
(f) Outside control limits due to possible matrix interference. Confirmed by reanalysis.
(g) Outside control limits due to possible matrix interference. Confirmed by MS/MSD.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3889-1MS | M43757.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |
| MC3889-1MSD | M43758.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |
| MC3889-1 | M43756.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-5, MC3835-6

| CAS No. | Compound | MC3889-1 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 50 | 39.0 | 78 | 39.6 | 79 | 2 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 250 | 636 | 254* [a] | 641 | 256* [a] | 1 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 50 | 215 | 430* [b] | 218 | 436* [b] | 1 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 50 | 53.8 | 108 | 53.0 | 106 | 1 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 50 | 53.7 | 107 | 53.4 | 107 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 50 | 58.3 | 117 | 57.0 | 114 | 2 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 50 | 61.5 | 123 | 60.1 | 120 | 2 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 50 | 50.7 | 101 | 50.3 | 101 | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 50 | 56.3 | 113 | 55.2 | 110 | 2 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 50 | 67.0 | 134* [a] | 62.5 | 125 | 7 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 50 | 56.6 | 113 | 54.3 | 109 | 4 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 50 | 56.5 | 113 | 54.8 | 110 | 3 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 50 | 54.9 | 110 | 53.7 | 107 | 2 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 50 | 56.4 | 113 | 53.1 | 106 | 6 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 50 | 68.4 | 137* [a] | 65.5 | 131* [a] | 4 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 50 | 56.1 | 112 | 54.6 | 109 | 3 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 50 | 56.8 | 114 | 55.3 | 111 | 3 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 50 | ND | 0* [a] | ND | 0* [a] | nc | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 50 | 59.0 | 118 | 55.7 | 111 | 6 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 50 | 51.9 | 104 | 52.8 | 106 | 2 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 50 | 52.1 | 104 | 50.3 | 101 | 4 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 50 | 53.6 | 107 | 52.4 | 105 | 2 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 50 | 45.8 | 92 | 47.1 | 94 | 3 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 50 | 59.7 | 119 | 58.4 | 117 | 2 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 50 | 52.9 | 106 | 52.8 | 106 | 0 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 50 | 54.2 | 108 | 52.8 | 106 | 3 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 50 | 54.7 | 109 | 53.1 | 106 | 3 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 50 | 53.2 | 106 | 52.2 | 104 | 2 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 50 | 68.8 | 138* [a] | 65.8 | 132* [a] | 4 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 50 | 59.0 | 118 | 55.5 | 111 | 6 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 50 | 62.3 | 125 | 60.0 | 120 | 4 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 50 | 60.4 | 121 | 57.3 | 115 | 5 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 50 | 56.6 | 113 | 54.6 | 109 | 4 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 50 | 58.8 | 118 | 56.2 | 112 | 5 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 50 | 57.5 | 115 | 56.5 | 113 | 2 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 50 | 52.5 | 105 | 51.6 | 103 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3889-1MS | M43757.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |
| MC3889-1MSD | M43758.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |
| MC3889-1 | M43756.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-5, MC3835-6

| CAS No. | Compound | MC3889-1 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 50 | 65.3 | 131* [a] | 60.9 | 122 | 7 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 50 | 62.0 | 124 | 59.1 | 118 | 5 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 50 | 53.4 | 107 | 52.9 | 106 | 1 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 50 | 57.9 | 116 | 56.5 | 113 | 2 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 250 | 163 | 65* [a] | 168 | 67* [a] | 3 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 50 | 47.9 | 96 | 48.3 | 97 | 1 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 50 | 55.2 | 110 | 54.2 | 108 | 2 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 50 | 71.9 | 144* [a] | 69.6 | 139* [a] | 3 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 50 | 43.4 | 87 | 44.4 | 89 | 2 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 50 | 62.0 | 124 | 61.1 | 122 | 1 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 50 | 58.6 | 117 | 56.5 | 113 | 4 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 50 | 52.3 | 105 | 51.8 | 104 | 1 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 50 | 45.6 | 91 | 46.7 | 93 | 2 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 50 | 57.2 | 114 | 56.0 | 112 | 2 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 50 | 56.8 | 114 | 54.0 | 108 | 5 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 50 | 46.4 | 93 | 47.1 | 94 | 1 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 50 | 53.9 | 108 | 52.2 | 104 | 3 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 50 | 53.1 | 106 | 51.8 | 104 | 2 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 50 | 59.8 | 120 | 57.9 | 116 | 3 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 50 | 44.0 | 88 | 44.4 | 89 | 1 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 50 | 61.7 | 123 | 59.4 | 119 | 4 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 50 | 59.2 | 118 | 58.0 | 116 | 2 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 50 | 54.9 | 110 | 55.4 | 111 | 1 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 50 | 58.7 | 117 | 58.9 | 118 | 0 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 50 | 65.6 | 131* [a] | 61.5 | 123 | 6 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 50 | 56.3 | 113 | 55.1 | 110 | 2 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 50 | 59.6 | 119 | 57.3 | 115 | 4 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 50 | 64.4 | 129 | 60.8 | 122 | 6 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 50 | 44.4 | 89 | 45.5 | 91 | 2 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 50 | 52.4 | 105 | 51.2 | 102 | 2 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 50 | 53.0 | 106 | 51.0 | 102 | 4 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 50 | 35.7 | 71 | 35.0 | 70 | 2 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 50 | 52.1 | 104 | 52.3 | 105 | 0 | 70-130/30 |
| | m,p-Xylene | ND | | 100 | 117 | 117 | 114 | 114 | 3 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 50 | 58.2 | 116 | 57.1 | 114 | 2 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 150 | 175 | 117 | 171 | 114 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3889-1MS | M43757.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |
| MC3889-1MSD | M43758.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |
| MC3889-1 | M43756.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3835-5, MC3835-6

| CAS No. | Surrogate Recoveries | MS | MSD | MC3889-1 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 95% | 92% | 96% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 97% | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 94% | 94% | 95% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Volatile Internal Standard Area Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSK1840-CC1831 | Injection Date: | 09/28/11 |
| Lab File ID: | K55066.D | Injection Time: | 10:38 |
| Instrument ID: | GCMSK | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 299034 | 8.86 | 389287 | 9.71 | 186592 | 12.97 | 217493 | 15.53 | 90720 | 6.48 |
| Upper Limit [a] | 598068 | 9.36 | 778574 | 10.21 | 373184 | 13.47 | 434986 | 16.03 | 181440 | 6.98 |
| Lower Limit [b] | 149517 | 8.36 | 194644 | 9.21 | 93296 | 12.47 | 108747 | 15.03 | 45360 | 5.98 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSK1840-BS | 301545 | 8.86 | 391734 | 9.71 | 189825 | 12.97 | 221279 | 15.53 | 85015 | 6.48 |
| MSK1840-BSD | 303916 | 8.87 | 393498 | 9.71 | 188834 | 12.97 | 225717 | 15.53 | 103296 | 6.48 |
| MSK1840-MB | 309161 | 8.87 | 417030 | 9.72 | 189437 | 12.97 | 213631 | 15.53 | 94123 | 6.48 |
| ZZZZZZ | 291231 | 8.86 | 391800 | 9.71 | 179761 | 12.97 | 203313 | 15.53 | 85531 | 6.50 |
| ZZZZZZ | 292496 | 8.86 | 393894 | 9.71 | 183269 | 12.97 | 208380 | 15.53 | 80117 | 6.49 |
| ZZZZZZ | 295577 | 8.86 | 400926 | 9.71 | 185414 | 12.97 | 212657 | 15.53 | 99341 | 6.50 |
| ZZZZZZ | 289621 | 8.87 | 391285 | 9.71 | 176997 | 12.97 | 193509 | 15.53 | 80803 | 6.48 |
| ZZZZZZ | 294403 | 8.86 | 394792 | 9.71 | 183741 | 12.97 | 202291 | 15.53 | 94985 | 6.48 |
| ZZZZZZ | 288067 | 8.87 | 390508 | 9.72 | 179624 | 12.97 | 192582 | 15.53 | 86443 | 6.48 |
| MC3828-3 | 289457 | 8.86 | 388734 | 9.71 | 178242 | 12.97 | 200203 | 15.53 | 87039 | 6.48 |
| MC3828-3MS | 280836 | 8.87 | 362891 | 9.71 | 180126 | 12.97 | 210233 | 15.53 | 89471 | 6.48 |
| MC3828-3MSD | 287591 | 8.86 | 374643 | 9.71 | 180970 | 12.97 | 213966 | 15.53 | 84406 | 6.48 |
| ZZZZZZ | 301933 | 8.87 | 408135 | 9.72 | 187366 | 12.97 | 207869 | 15.53 | 91295 | 6.48 |
| MC3835-2 | 297121 | 8.86 | 402900 | 9.71 | 184703 | 12.97 | 205206 | 15.53 | 86781 | 6.48 |
| MC3835-4 | 294039 | 8.86 | 391105 | 9.71 | 181784 | 12.97 | 208102 | 15.53 | 87543 | 6.48 |
| ZZZZZZ | 294548 | 8.86 | 391657 | 9.71 | 180724 | 12.97 | 209806 | 15.53 | 88010 | 6.48 |
| ZZZZZZ | 298525 | 8.87 | 405963 | 9.71 | 185379 | 12.97 | 215640 | 15.53 | 94023 | 6.48 |
| ZZZZZZ | 303170 | 8.87 | 406142 | 9.72 | 184745 | 12.97 | 215000 | 15.53 | 93970 | 6.48 |
| MC3835-1 | 296433 | 8.87 | 385741 | 9.72 | 183325 | 12.97 | 220765 | 15.53 | 94047 | 6.48 |
| ZZZZZZ | 308773 | 8.86 | 411223 | 9.71 | 187124 | 12.97 | 214925 | 15.53 | 92701 | 6.48 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1414-CC1370 | Injection Date: | 10/04/11 |
| Lab File ID: | M43743.D | Injection Time: | 10:33 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 80213 | 9.19 | 119256 | 10.07 | 60933 | 13.34 | 79280 | 15.90 | 20631 | 6.74 |
| Upper Limit [a] | 160426 | 9.69 | 238512 | 10.57 | 121866 | 13.84 | 158560 | 16.40 | 41262 | 7.24 |
| Lower Limit [b] | 40107 | 8.69 | 59628 | 9.57 | 30467 | 12.84 | 39640 | 15.40 | 10316 | 6.24 |
| **Lab Sample ID** | **IS 1 AREA** | **RT** | **IS 2 AREA** | **RT** | **IS 3 AREA** | **RT** | **IS 4 AREA** | **RT** | **IS 5 AREA** | **RT** |
| MSM1414-BS | 85277 | 9.19 | 125870 | 10.07 | 64301 | 13.34 | 82889 | 15.90 | 22007 | 6.75 |
| MSM1414-MB | 82890 | 9.19 | 121056 | 10.06 | 58982 | 13.34 | 74760 | 15.90 | 22387 | 6.74 |
| ZZZZZZ | 78486 | 9.19 | 113135 | 10.06 | 56908 | 13.34 | 70928 | 15.90 | 21456 | 6.73 |
| MC3835-6 | 78941 | 9.19 | 115264 | 10.07 | 56066 | 13.34 | 70841 | 15.90 | 21759 | 6.74 |
| ZZZZZZ | 77551 | 9.19 | 112945 | 10.07 | 55555 | 13.34 | 70531 | 15.90 | 21411 | 6.75 |
| ZZZZZZ | 77216 | 9.19 | 111697 | 10.07 | 54744 | 13.34 | 69499 | 15.90 | 20668 | 6.74 |
| MC3835-5 | 74473 | 9.19 | 110011 | 10.07 | 53420 | 13.34 | 67532 | 15.90 | 20826 | 6.75 |
| ZZZZZZ | 75926 | 9.19 | 111363 | 10.07 | 54094 | 13.34 | 68305 | 15.90 | 20881 | 6.74 |
| ZZZZZZ | 75361 | 9.19 | 111804 | 10.07 | 54925 | 13.34 | 68901 | 15.90 | 21791 | 6.75 |
| ZZZZZZ | 79186 | 9.19 | 117295 | 10.07 | 57900 | 13.34 | 72369 | 15.90 | 22020 | 6.74 |
| MC3889-1 | 78223 | 9.19 | 116495 | 10.07 | 56667 | 13.34 | 69012 | 15.90 | 21467 | 6.75 |
| MC3889-1MS | 82761 | 9.19 | 128391 | 10.07 | 65949 | 13.34 | 82838 | 15.90 | 23148 | 6.74 |
| MC3889-1MSD | 88673 | 9.19 | 134015 | 10.06 | 68826 | 13.33 | 86039 | 15.90 | 26009 | 6.74 |
| ZZZZZZ | 87242 | 9.19 | 134038 | 10.07 | 64655 | 13.34 | 79759 | 15.90 | 26497 | 6.73 |
| ZZZZZZ | 85196 | 9.19 | 127082 | 10.07 | 61122 | 13.34 | 75046 | 15.90 | 21906 | 6.74 |
| ZZZZZZ | 81731 | 9.19 | 122382 | 10.07 | 59012 | 13.34 | 72988 | 15.90 | 21548 | 6.73 |
| ZZZZZZ | 81301 | 9.19 | 122679 | 10.07 | 59756 | 13.34 | 72229 | 15.90 | 21082 | 6.74 |
| ZZZZZZ | 80148 | 9.19 | 117414 | 10.07 | 58522 | 13.34 | 70338 | 15.90 | 21053 | 6.74 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV95-CC67 | Injection Date: | 09/29/11 |
| Lab File ID: | V2165.D | Injection Time: | 07:49 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 450184 | 6.55 | 673596 | 7.74 | 347788 | 11.09 | 357567 | 13.32 | 136732 | 3.52 |
| Upper Limit [a] | 900368 | 7.05 | 1347192 | 8.24 | 695576 | 11.59 | 715134 | 13.82 | 273464 | 4.02 |
| Lower Limit [b] | 225092 | 6.05 | 336798 | 7.24 | 173894 | 10.59 | 178784 | 12.82 | 68366 | 3.02 |
| **Lab Sample ID** | **IS 1 AREA** | **RT** | **IS 2 AREA** | **RT** | **IS 3 AREA** | **RT** | **IS 4 AREA** | **RT** | **IS 5 AREA** | **RT** |
| MSV95-MB | 422585 | 6.55 | 644581 | 7.74 | 340865 | 11.09 | 358010 | 13.32 | 198199 | 3.51 |
| MSV95-BS | 411582 | 6.55 | 616713 | 7.74 | 322990 | 11.09 | 332060 | 13.32 | 138290 | 3.52 |
| ZZZZZZ | 398329 | 6.55 | 607327 | 7.73 | 315943 | 11.08 | 329904 | 13.32 | 121160 | 3.51 |
| ZZZZZZ | 405852 | 6.54 | 618367 | 7.73 | 323555 | 11.08 | 329659 | 13.32 | 96506 | 3.50 |
| ZZZZZZ | 390128 | 6.55 | 599312 | 7.74 | 313315 | 11.09 | 313791 | 13.32 | 88161 | 3.50 |
| ZZZZZZ | 381004 | 6.55 | 585563 | 7.74 | 306904 | 11.09 | 310345 | 13.32 | 93704 | 3.51 |
| ZZZZZZ | 367026 | 6.55 | 567568 | 7.74 | 296256 | 11.09 | 292053 | 13.32 | 102409 | 3.52 |
| ZZZZZZ | 364035 | 6.55 | 563562 | 7.74 | 296724 | 11.09 | 293663 | 13.32 | 101671 | 3.51 |
| ZZZZZZ | 369075 | 6.56 | 564386 | 7.74 | 291722 | 11.09 | 288062 | 13.32 | 88000 | 3.52 |
| ZZZZZZ | 348416 | 6.56 | 534682 | 7.74 | 283256 | 11.09 | 280390 | 13.32 | 91221 | 3.51 |
| ZZZZZZ | 345148 | 6.56 | 538125 | 7.75 | 271039 | 11.09 | 217077 | 13.32 | 81164 | 3.52 |
| MC3835-3 | 322599 | 6.56 | 505676 | 7.75 | 276934 | 11.09 | 269765 | 13.32 | 134799 | 3.52 |
| MC3903-7 | 299770 | 6.56 | 485285 | 7.75 | 203439 | 11.09 | 111934[c] | 13.32 | 100720 | 3.53 |
| ZZZZZZ | 312691 | 6.56 | 504575 | 7.74 | 208894 | 11.09 | 113645[c] | 13.32 | 131438 | 3.51 |
| MC3903-7MS | 116975[d] | 6.56 | 175388[d] | 7.75 | 78810[d] | 11.09 | 49641[d] | 13.33 | 52769[d] | 3.50 |
| MC3903-7MSD | 334127 | 6.57 | 515722 | 7.75 | 214291 | 11.09 | 124051[d] | 13.33 | 161605 | 3.53 |
| ZZZZZZ | 324667 | 6.56 | 504128 | 7.75 | 254461 | 11.09 | 202571 | 13.33 | 91113 | 3.52 |
| ZZZZZZ | 349397 | 6.57 | 552100 | 7.75 | 289348 | 11.10 | 282108 | 13.33 | 96561 | 3.53 |
| ZZZZZZ | 349571 | 6.57 | 556876 | 7.75 | 297500 | 11.09 | 270392 | 13.33 | 165477 | 3.52 |
| MC3903-7 | 311204 | 6.56 | 506324 | 7.75 | 214615 | 11.09 | 117737[c] | 13.33 | 137100 | 3.52 |
| ZZZZZZ | 312259 | 6.57 | 508797 | 7.75 | 214831 | 11.09 | 122989[c] | 13.33 | 120453 | 3.52 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.
(d) Outside control limits due to possible matrix interference. Confirmed by MS/MSD.

# Volatile Surrogate Recovery Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3835-5 | M43752.D | 95.0 | 97.0 | 92.0 |
| MC3835-6 | M43749.D | 92.0 | 97.0 | 92.0 |
| MC3889-1MS | M43757.D | 95.0 | 97.0 | 94.0 |
| MC3889-1MSD | M43758.D | 92.0 | 97.0 | 94.0 |
| MSM1414-BS | M43744.D | 90.0 | 100.0 | 96.0 |
| MSM1414-MB | M43747.D | 91.0 | 97.0 | 93.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

5.6.1

5

# Volatile Surrogate Recovery Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3835-1 | K55090.D | 106.0 | 104.0 | 107.0 |
| MC3835-2 | K55085.D | 112.0 | 108.0 | 117.0 |
| MC3835-3 | V2179.D | 98.0 | 99.0 | 99.0 |
| MC3835-4 | K55086.D | 96.0 | 106.0 | 110.0 |
| MC3828-3MS | K55082.D | 103.0 | 111.0 | 107.0 |
| MC3828-3MSD | K55083.D | 97.0 | 107.0 | 103.0 |
| MC3903-7MS | V2182.D | 101.0 | 91.0 | 124.0 |
| MC3903-7MSD | V2183.D | 104.0 | 90.0 | 134.0* [a] |
| MSK1840-BS | K55067.D | 101.0 | 108.0 | 104.0 |
| MSK1840-BSD | K55068.D | 99.0 | 103.0 | 101.0 |
| MSK1840-MB | K55069.D | 109.0 | 106.0 | 112.0 |
| MSV95-BS | V2167.D | 96.0 | 99.0 | 97.0 |
| MSV95-MB | V2166.D | 91.0 | 96.0 | 93.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

(a) Outside control limits due to possible matrix interference. Confirmed by MS/MSD.

New England ACCUTEST LABORATORIES

# GC Volatiles



## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1324-MB | BH24096.D | 1 | 09/24/I1 | WS | n/a | n/a | GBH1324 |



The QC reported here applies to the following samples: Method: SW846 8015

MC3835-1, MC3835-2, MC3835-3, MC3835-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 0.95 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 93% | 36-148% |

# Method Blank Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1336-MB | BH24330A.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1336 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3835-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 0.10 | 0.070 | mg/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 88% | 60-126% |

# Blank Spike Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1324-BSP | BH24097.D | 1 | 09/24/11 | WS | n/a | n/a | GBH1324 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3835-1, MC3835-2, MC3835-3, MC3835-4

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 15.9 | 80 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 93% | 36-148% |

# Blank Spike Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1336-BSP | BH24331A.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1336 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3835-5

| CAS No. | Compound | Spike mg/l | BSP mg/l | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 0.4 | 0.402 | 101 | 68-134 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 87% | 60-126% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3731-12MS | BH24105.D | 1 | 09/24/11 | WS | n/a | n/a | GBH1324 |
| MC3731-12MSD | BH24106.D | 1 | 09/24/11 | WS | n/a | n/a | GBH1324 |
| MC3731-12 | BH24104.D | 1 | 09/24/11 | WS | n/a | n/a | GBH1324 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3835-1, MC3835-2, MC3835-3, MC3835-4

| CAS No. | Compound | MC3731-12 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 41.8 | | 48.7 | 46.3 | 9* [a] | 40.4 | -3* [a] | 14 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3731-12 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 95% | 95% | 104% | 36-148% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3835-5MS | BH24333.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1336 |
| MC3835-5MSD | BH24334.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1336 |
| MC3835-5 | BH24332.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1336 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3835-5

| CAS No. | Compound | MC3835-5 mg/l | Q | Spike mg/l | MS mg/l | MS % | MSD mg/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 0.4 | 0.434 | 109 | 0.417 | 104 | 4 | 72-131/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3835-5 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 91% | 87% | 89% | 60-126% |

# Volatile Surrogate Recovery Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8015 Matrix: AQ

Samples and QC shown here apply to the above mcthod

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3835-5 | BH24332.D | 89.0 |
| GBHI336-BSP | BH2433IA.D | 87.0 |
| GBH1336-MB | BH24330A.D | 88.0 |
| MC3835-5MS | BH24333.D | 91.0 |
| MC3835-5MSD | BH24334.D | 87.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 60-126% |

(a) Recovery from GC signal #1

# Volatile Surrogate Recovery Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3835-1 | BH24115.D | 87.0 |
| MC3835-2 | BH24116.D | 92.0 |
| MC3835-3 | BH24117.D | 91.0 |
| MC3835-4 | BH24118.D | 99.0 |
| GBH1324-BSP | BH24097.D | 93.0 |
| GBH1324-MB | BH24096.D | 93.0 |
| MC3731-12MS | BH24105.D | 95.0 |
| MC3731-12MSD | BH24106.D | 95.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1324-CC1043 | Injection Date: | 09/24/11 |
| Lab File ID: | BH24095.D | Injection Time: | 09:04 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1324-MB | BH24096.D | 09/24/11 | 09:44 | 32.40 |
| GBH1323-MB | BH24096A.D | 09/24/11 | 09:44 | 32.40 |
| GBH1324-BSP | BH24097.D | 09/24/11 | 10:25 | 32.39 |
| GBH1323-BSP | BH24097A.D | 09/24/11 | 10:25 | 32.39 |
| MC3872-2 | BH24098.D | 09/24/11 | 11:04 | 32.39 |
| MC3872-2MS | BH24099.D | 09/24/11 | 11:45 | 32.40 |
| MC3872-2MSD | BH24100.D | 09/24/11 | 12:25 | 32.39 |
| ZZZZZZ | BH24101.D | 09/24/11 | 13:05 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1323-CC1043 | Injection Date: | 09/24/11 |
| Lab File ID: | BH24095A.D | Injection Time: | 09:04 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1324-MB | BH24096.D | 09/24/11 | 09:44 | 32.40 |
| GBH1323-MB | BH24096A.D | 09/24/11 | 09:44 | 32.40 |
| GBH1324-BSP | BH24097.D | 09/24/11 | 10:25 | 32.39 |
| GBH1323-BSP | BH24097A.D | 09/24/11 | 10:25 | 32.39 |
| MC3872-2 | BH24098.D | 09/24/11 | 11:04 | 32.39 |
| MC3872-2MS | BH24099.D | 09/24/11 | 11:45 | 32.40 |
| MC3872-2MSD | BH24100.D | 09/24/11 | 12:25 | 32.39 |
| ZZZZZZ | BH24101.D | 09/24/11 | 13:05 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1324-CC1043 | Injection Date: | 09/24/11 |
| Lab File ID: | BH24102.D | Injection Time: | 13:45 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BH24103.D | 09/24/11 | 14:26 | 32.40 |
| MC3731-12 | BH24104.D | 09/24/11 | 15:06 | 32.40 |
| MC3731-12MS | BH24105.D | 09/24/11 | 15:46 | 32.40 |
| MC3731-12MSD | BH24106.D | 09/24/11 | 16:26 | 32.40 |
| ZZZZZZ | BH24107.D | 09/24/11 | 17:06 | 32.40 |
| ZZZZZZ | BH24108.D | 09/24/11 | 17:46 | 32.40 |
| ZZZZZZ | BH24109.D | 09/24/11 | 18:27 | 32.40 |
| ZZZZZZ | BH24110.D | 09/24/11 | 19:07 | 32.40 |
| ZZZZZZ | BH24111.D | 09/24/11 | 19:47 | 32.40 |
| ZZZZZZ | BH24112.D | 09/24/11 | 20:27 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1323-CC1043 | Injection Date: | 09/24/11 |
| Lab File ID: | BH24102A.D | Injection Time: | 13:45 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BH24103.D | 09/24/11 | 14:26 | 32.40 |
| MC3731-12 | BH24104.D | 09/24/11 | 15:06 | 32.40 |
| MC3731-12MS | BH24105.D | 09/24/11 | 15:46 | 32.40 |
| MC3731-12MSD | BH24106.D | 09/24/11 | 16:26 | 32.40 |
| ZZZZZZ | BH24107.D | 09/24/11 | 17:06 | 32.40 |
| ZZZZZZ | BH24108.D | 09/24/11 | 17:46 | 32.40 |
| ZZZZZZ | BH24109.D | 09/24/11 | 18:27 | 32.40 |
| ZZZZZZ | BH24110.D | 09/24/11 | 19:07 | 32.40 |
| ZZZZZZ | BH24111.D | 09/24/11 | 19:47 | 32.40 |
| ZZZZZZ | BH24112.D | 09/24/11 | 20:27 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1324-CC1043 | Injection Date: | 09/24/11 |
| Lab File ID: | BH24113.D | Injection Time: | 21:08 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BH24114.D | 09/24/11 | 21:48 | 32.39 |
| MC3835-1 | BH24115.D | 09/24/11 | 22:28 | 32.39 |
| MC3835-2 | BH24116.D | 09/24/11 | 23:08 | 32.39 |
| MC3835-3 | BH24117.D | 09/24/11 | 23:48 | 32.39 |
| MC3835-4 | BH24118.D | 09/25/11 | 00:28 | 32.40 |
| ZZZZZZ | BH24119.D | 09/25/11 | 01:08 | 32.39 |
| ZZZZZZ | BH24120.D | 09/25/11 | 01:48 | 32.39 |
| ZZZZZZ | BH24121.D | 09/25/11 | 02:29 | 32.39 |
| ZZZZZZ | BH24122.D | 09/25/11 | 03:09 | 32.40 |
| ZZZZZZ | BH24123.D | 09/25/11 | 03:49 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

6.5.5

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# GC Surrogate Retention Time Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1337-CC1043 | Injection Date: | 10/04/11 |
| Lab File ID: | BH24329.D | Injection Time: | 12:45 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1337-MB | BH24330.D | 10/04/11 | 13:25 | 32.40 |
| GBH1336-MB | BH24330A.D | 10/04/11 | 13:25 | 32.40 |
| GBH1337-BSP | BH24331.D | 10/04/11 | 14:05 | 32.40 |
| GBH1336-BSP | BH24331A.D | 10/04/11 | 14:05 | 32.40 |
| MC3835-5 | BH24332.D | 10/04/11 | 14:45 | 32.40 |
| MC3835-5MS | BH24333.D | 10/04/11 | 15:24 | 32.40 |
| MC3835-5MSD | BH24334.D | 10/04/11 | 16:04 | 32.40 |
| ZZZZZZ | BH24335.D | 10/04/11 | 16:44 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1336-CC1043 | Injection Date: | 10/04/11 |
| Lab File ID: | BH24329A.D | Injection Time: | 12:45 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1337-MB | BH24330.D | 10/04/11 | 13:25 | 32.40 |
| GBH1336-MB | BH24330A.D | 10/04/11 | 13:25 | 32.40 |
| GBH1337-BSP | BH24331.D | 10/04/11 | 14:05 | 32.40 |
| GBH1336-BSP | BH24331A.D | 10/04/11 | 14:05 | 32.40 |
| MC3835-5 | BH24332.D | 10/04/11 | 14:45 | 32.40 |
| MC3835-5MS | BH24333.D | 10/04/11 | 15:24 | 32.40 |
| MC3835-5MSD | BH24334.D | 10/04/11 | 16:04 | 32.40 |
| ZZZZZZ | BH24335.D | 10/04/11 | 16:44 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

New England ACCUTEST LABORATORIES

## GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26384-MB | BG31420.D | 1 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3835-1, MC3835-2, MC3835-3, MC3835-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 16 | 12 | mg/kg | |
| | TPH (>C28-C40) | ND | 16 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 78% | 24-147% |

# Method Blank Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26420-MB | BG31379.D | 1 | 10/04/11 | KD | 09/28/11 | OP26420 | GBG1122 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3835-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 0.20 | 0.14 | mg/l | |
| | TPH (>C28-C40) | ND | 0.20 | 0.14 | mg/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 72% | 33-150% |

# Blank Spike Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26384-BS | BG31421.D | 1 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3835-1, MC3835-2, MC3835-3, MC3835-4

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 161 | 153 | 95 | 63-139 |
| | TPH (>C28-C40) | 161 | 105 | 65 | 46-103 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 90% | 24-147% |

# Blank Spike Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26420-BS | BG31381.D | 1 | 10/04/11 | KD | 09/28/11 | OP26420 | GBG1122 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3835-5

| CAS No. | Compound | Spike mg/l | BSP mg/l | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 2.5 | 2.51 | 100 | 46-120 |
| | TPH (>C28-C40) | 2.5 | 2.00 | 80 | 46-120 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 82% | 33-150% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26384-MS | BG31422.D | 1 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |
| OP26384-MSD | BG31423.D | 1 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |
| MC3836-3 | BG31424.D | 1 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3835-1, MC3835-2, MC3835-3, MC3835-4



| CAS No. | Compound | MC3836-3 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 184 | 134 | 73 | 179 | 98 | 29 | 8-154/127 |
| | TPH (>C28-C40) | ND | | 184 | 81.3 | 44 | 125 | 69 | 42* [a] | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3836-3 | Limits |
|---|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 68% | 96% | 88% | 24-147% |

(a) Outside control limits due to possible matrix interference.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26420-MS | BG31383.D | 1 | 10/04/11 | KD | 09/28/11 | OP26420 | GBG1122 |
| OP26420-MSD | BG31385.D | 1 | 10/04/11 | KD | 09/28/11 | OP26420 | GBG1122 |
| MC4057-2 | BG31387.D | 1 | 10/04/11 | KD | 09/28/11 | OP26420 | GBG1122 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3835-5



| CAS No. | Compound | MC4057-2 mg/l | Q | Spike mg/l | MS mg/l | MS % | MSD mg/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 2.5 | 2.67 | 107 | 2.19 | 88 | 20 | 45-120/25 |
| | TPH (>C28-C40) | ND | | 2.5 | 2.12 | 85 | 1.72 | 69 | 21 | 45-120/25 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4057-2 | Limits |
|---|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 86% | 74% | 86% | 33-150% |

# Semivolatile Surrogate Recovery Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3835-5 | BG31417.D | 72.0 |
| OP26420-BS | BG31381.D | 82.0 |
| OP26420-MB | BG31379.D | 72.0 |
| OP26420-MS | BG31383.D | 86.0 |
| OP26420-MSD | BG31385.D | 74.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 1-Chlorooctadecane | 33-150% |

(a) Recovery from GC signal #1

# Semivolatile Surrogate Recovery Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3835-1 | BG31436.D | 102.0 |
| MC3835-2 | BG31425.D | 80.0 |
| MC3835-3 | BG31426.D | 96.0 |
| MC3835-4 | BG31428.D | 78.0 |
| OP26384-BS | BG31421.D | 90.0 |
| OP26384-MB | BG31420.D | 78.0 |
| OP26384-MS | BG31422.D | 68.0 |
| OP26384-MSD | BG31423.D | 96.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 1-Chlorooctadecane | 24-147% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1122-ICC1122 | Injection Date: | 10/03/11 |
| Lab File ID: | BG31373.D | Injection Time: | 21:42 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 17.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26420-MB | BG31379.D | 10/04/11 | 00:20 | 17.39 |
| OP26420-BS | BG31381.D | 10/04/11 | 01:17 | 17.39 |
| OP26420-MS | BG31383.D | 10/04/11 | 02:13 | 17.39 |
| OP26420-MSD | BG31385.D | 10/04/11 | 03:09 | 17.39 |
| MC4057-2 | BG31387.D | 10/04/11 | 04:13 | 17.39 |
| GBG1122-ECC112 | BG31393.D | 10/04/11 | 08:35 | 17.39 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.1

7

# GC Surrogate Retention Time Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1125-ICC1125 | Injection Date: | 10/04/11 |
| Lab File ID: | BG31414.D | Injection Time: | 22:06 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 16.31 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3835-5 | BG31417.D | 10/05/11 | 00:24 | 16.31 |
| ZZZZZZ | BG31418.D | 10/05/11 | 01:11 | 16.30 |
| ZZZZZZ | BG31419.D | 10/05/11 | 01:57 | 16.30 |
| OP26384-MB | BG31420.D | 10/05/11 | 02:43 | 16.31 |
| OP26384-BS | BG31421.D | 10/05/11 | 03:30 | 16.31 |
| OP26384-MS | BG31422.D | 10/05/11 | 04:16 | 16.31 |
| OP26384-MSD | BG31423.D | 10/05/11 | 05:02 | 16.31 |
| MC3836-3 | BG31424.D | 10/05/11 | 05:49 | 16.31 |
| MC3835-2 | BG31425.D | 10/05/11 | 06:35 | 16.31 |
| MC3835-3 | BG31426.D | 10/05/11 | 07:22 | 16.31 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.2

7

# GC Surrogate Retention Time Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1125-CC1125 | Injection Date: | 10/05/11 |
| Lab File ID: | BG31427.D | Injection Time: | 08:08 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 16.31 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3835-4 | BG31428.D | 10/05/11 | 08:54 | 16.31 |
| ZZZZZZ | BG31429.D | 10/05/11 | 09:40 | 16.31 |
| ZZZZZZ | BG31430.D | 10/05/11 | 10:26 | 16.33 |
| ZZZZZZ | BG31431.D | 10/05/11 | 11:12 | 16.31 |
| ZZZZZZ | BG31432.D | 10/05/11 | 11:58 | 16.33 |
| ZZZZZZ | BG31434.D | 10/05/11 | 13:30 | 16.31 |
| ZZZZZZ | BG31435.D | 10/05/11 | 14:17 | 16.29 |
| MC3835-1 | BG31436.D | 10/05/11 | 15:02 | 16.29 |
| GBG1125-ECC112 | BG31437.D | 10/05/11 | 15:48 | 16.31 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.3

7

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## General Chemistry

# QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC3835
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC3835-1 Analyzed: 23-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE31 (20-22.5)092111

| | | |
|---|---|---|
| Wet Weight (Total) | 34.96 | g |
| Tare Weight | 22.09 | g |
| Dry Weight (Total) | 33.811 | g |
| Solids, Percent | 91.1 | % |

Sample: MC3835-2 Analyzed: 23-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE9 (12.5-15)092111

| | | |
|---|---|---|
| Wet Weight (Total) | 45.669 | g |
| Tare Weight | 27.945 | g |
| Dry Weight (Total) | 40.93 | g |
| Solids, Percent | 73.3 | % |

Sample: MC3835-3 Analyzed: 23-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE7 (12.5-15)092111 DUP

| | | |
|---|---|---|
| Wet Weight (Total) | 29.305 | g |
| Tare Weight | 16.951 | g |
| Dry Weight (Total) | 28.343 | g |
| Solids, Percent | 92.2 | % |

Sample: MC3835-4 Analyzed: 23-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE30 (25-27.5)092111

| | | |
|---|---|---|
| Wet Weight (Total) | 31.153 | g |
| Tare Weight | 20.38 | g |
| Dry Weight (Total) | 30.485 | g |
| Solids, Percent | 93.8 | % |

# SVE Install 2011 Data Review

**Laboratory SDG: MC3836**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 1/9/2012**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| SVE-30 (3-4) 092111 | SVE-29 (25-27.5) 092111 |
| SVE-28 (10-12.5) 092111 | SVE-8 (15-17.5) 092111 |
| VMP-37 (6-7) 092111 | SVE-29 (25-27.5) 092111 Dup |
| SVE-7 (12.5-15) 092111 | TB-092111 |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes, however sample duplicate pair SVE-7 (12.5-15) 092111/SVE-7 (12.5-15) 092111 Dup were separated into SDGs MC3836 and MC3835, respectively. The sample duplicate pair was compared.

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS recoveries were outside evaluation criteria. Surrogate recoveries for the initial run for sample SVE-8 (15-17.5) were outside evaluation criteria. VOC MS/MSD recoveries and TPH-ORO MS/MSD RPD recoveries were outside evaluation criteria. Internal standard area recoveries for the initial run results for sample SVE-8 (15-17.5)-092111 were outside criteria. Xylene (total) was qualified due to field duplicate RPD outside evaluation criteria in field duplicate pair, SVE-7 (12.5-15) 092111/SVE-7 (12.5-15) 092111 Dup. Professional judgment was used to qualify acetone in These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 1.4° C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; therefore, no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSV94-BS | VOCs | Acetone | **159** | NA | 70-130 |
| MSV94-BS | VOCs | Acrolein | **524** | NA | 70-130 |
| MSV94-BS | VOCs | Acrylonitrile | **632** | NA | 70-130 |
| MSM1414-BS | VOCs | Acrylonitrile | **396** | NA | 70-130 |
| MSM1414-BS | VOCs | Carbon tetrachloride | **137** | NA | 70-130 |
| MSM1414-BS | VOCs | 2-Chloroethyl vinyl ether | **43** | NA | 70-130 |
| MSM1414-BS | VOCs | 2,2-Dichloropropane | **133** | NA | 70-130 |
| MSM1414-BS | VOCs | Hexachlorobutadiene | **155** | NA | 70-130 |
| MSM1414-BS | VOCs | Tetrachloroethene | **132** | NA | 70-130 |
| MSM1414-BS | VOCs | Vinyl acetate | **68** | NA | 70-130 |

Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS MSM1414-BS was associated with trip blank TB-092111 and equipment blank SVE-9 092111 EB. Trip blank and equipment blank samples are quality control samples and are not qualified. No qualification of data was required.

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

No

| Sample ID | Parameter | Surrogate | Recovery | Criteria |
|---|---|---|---|---|
| SVE-8 (15-17.5) 092111 | VOCs | Toluene-$d_8$ | **251** | 70-130 |
| SVE-8 (15-17.5) 092111 | VOCs | 4-Bromofluorobenzene | **321** | 70-130 |

Analytical data that required qualification based on surrogate data are in included in the table below. The initial run results for sample SVE-8 (15-17.5)-092111 were outside criteria; however lab data used the second confirmation run results, which were inside criteria, for the compounds n-butylbenzene, isopropylbenzene, and n-propylbenzene. Analytical data reported as non-detect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| SVE-8 (15-17.5) 092111 | VOCs | Benzene | **J** |
| SVE-8 (15-17.5) 092111 | VOCs | sec-Butylbenzene | **J** |
| SVE-8 (15-17.5) 092111 | VOCs | tert-Butylbenzene | **J** |
| SVE-8 (15-17.5) 092111 | VOCs | Ethylbenzene | **J** |
| SVE-8 (15-17.5) 092111 | VOCs | p-Isopropyltoluene | **J** |
| SVE-8 (15-17.5) 092111 | VOCs | Naphthalene | **J** |
| SVE-8 (15-17.5) 092111 | VOCs | Toluene | **J** |
| SVE-8 (15-17.5) 092111 | VOCs | 1,2,4-Trimethylbenzene | **J** |
| SVE-8 (15-17.5) 092111 | VOCs | 1,3,5-Trimethylbenzene | **J** |
| SVE-8 (15-17.5) 092111 | VOCs | m,p-Xylene | **J** |

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| SVE-8 (15-17.5) 092111 | VOCs | o-Xylene | **J** |
| SVE-8 (15-17.5) 092111 | VOCs | Xylene (total) | **J** |

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, sample SVE-28 (10-12.5) 092111 was spiked and analyzed for VOCs, TPH-GRO, and TPH-DRO/ORO.

*Were MS/MSD recoveries within evaluation criteria?*

No

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/RPD Criteria |
|---|---|---|---|---|---|
| SVE-28 (10-12.5) 092111 | VOCs | Acrolein | **535/517** | 0 | 70-130/30 |
| SVE-28 (10-12.5) 092111 | VOCs | Acrylonitrile | **614/630** | 6 | 70-130/30 |
| SVE-28 (10-12.5) 092111 | VOCs | 2-Butanone (MEK) | **169/165** | 2 | 70-130/30 |
| SVE-28 (10-12.5) 092111 | VOCs | 2-Chloroethyl vinyl ether | **0/0** | NA | 10-160/30 |
| SVE-28 (10-12.5) 092111 | VOCs | 1,2-Dibromo-3-chloropropane | **138/148** | 10 | 70-130/30 |
| SVE-28 (10-12.5) 092111 | VOCs | 1,4-Dioxane | **142/141** | 3 | 70-130/30 |
| SVE-28 (10-12.5) 092111 | VOCs | 2-Hexanone | **175/177** | 5 | 70-130/30 |
| SVE-28 (10-12.5) 092111 | VOCs | 4-Methyl-2-pentanone (MIBK) | **177/181** | 6 | 70-130/30 |
| SVE-28 (10-12.5) 092111 | VOCs | 1,1,2,2-Tetrachloroethane | 128/**136** | 9 | 70-130/30 |
| SVE-28 (10-12.5) 092111 | VOCs | 1,2,3-Trichloropropane | 129/**136** | 9 | 70-130/30 |
| SVE-28 (10-12.5) 092111 | TPH-DRO/ORO | TPH-ORO | 44/69 | **42** | -39-170/41 |

USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone and LCS recoveries were within evaluation criteria with the exception of compounds listed and qualified as appropriate in Section 5.0 of this data review. No further qualification of the data was required.

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

No

| Sample ID | Parameter | Analyte | IS Area Recovery | IS Criteria |
|---|---|---|---|---|
| SVE-8 (15-17.5) 092111 | VOCs | Chlorobenzene-$d_5$ | **1376278** | 158637-634548 |

The initial run results for sample SVE-8 (15-17.5)-092111 were outside criteria; however lab data used the second confirmation run results, which were inside criteria. Therefore no qualification of the data was required.

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

Yes, as noted in Section 1.0 of this data review, please see laboratory SDG MC3835 for data of sample SVE-7 (12.5-15) 092111 DUP.

| Field ID | Field Duplicate ID |
|---|---|
| SVE-7 (12.5-15) 092111 | SVE-7 (12.5-15) 092111 DUP |
| SVE-29 (25-27.5) 092111 | SVE-29 (25-27.5) 092111 DUP |

*Were field duplicates within evaluation criteria?*

No

| Field ID | Field Duplicate ID | Parameter | Analyte | RPD | Qualification |
|---|---|---|---|---|---|
| SVE-7 (12.5-15) 092111 | SVE-7 (12.5-15) 092111 DUP | VOCs | Xylene (total) | **200** | **J/UJ** |

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

Yes, professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations greater than two times (2X) the reporting limit (RL), since acetone is not representative of site conditions. Additionally, USEPA Method 5035A states that acidification of certain soils with sodium bisulfate may produce a false positive acetone artifact of 100-200 ppb, or more. Acetone reported at concentrations less than 200 ppb (ug/kg) were qualified.

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| SVE-7 (12.5-15) 092111 | Acetone | 30.6 ug/kg | **U** | Professional Judgment |

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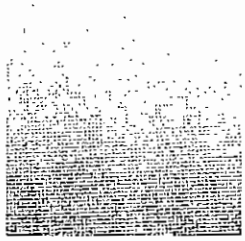
11/23/11





Technical Report for

Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC3836

Sampling Date: 09/21/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **117**

Reviewed on 1/9/2012

Reza Pand
Lab Director

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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# Sample Summary

Shell Oil

Job No: MC3836

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| MC3836-1 | 09/21/11 | 09:30 | LRSW | 09/22/11 | SO | Soil | SVE30 (3-4)092111 |
| MC3836-2 | 09/21/11 | 10:30 | LRSW | 09/22/11 | SO | Soil | SVE29 (25-27.5)092111 |
| MC3836-3 | 09/21/11 | 13:20 | LRSW | 09/22/11 | SO | Soil | SVE28 (10-12.5)092111 |
| MC3836-3D | 09/21/11 | 13:20 | LRSW | 09/22/11 | SO | Soil Dup/MSD | SVE28 (10-12.5)092111 |
| MC3836-3S | 09/21/11 | 13:20 | LRSW | 09/22/11 | SO | Soil Matrix Spike | SVE28 (10-12.5)092111 |
| MC3836-4 | 09/21/11 | 11:00 | LRSW | 09/22/11 | SO | Soil | SVE8 (15-17.5)092111 |
| MC3836-5 | 09/21/11 | 11:25 | LRSW | 09/22/11 | SO | Soil | VMP37 (6-7)092111 |
| MC3836-6 | 09/21/11 | 10:30 | LRSW | 09/22/11 | SO | Soil | SVE29 (25-27.5)092111 DUP |
| MC3836-7 | 09/21/11 | 09:05 | LRSW | 09/22/11 | SO | Soil | SVE7 (12.5-15)092111 |
| MC3836-8 | 09/21/11 | 18:30 | LRSW | 09/22/11 | AQ | Trip Blank Water | TB092111 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

ACCUTEST Laboratories

2

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC3836 |
| **Site:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Ra | **Report Date** | 10/7/2011 5:00:20 PM |

7 Sample(s), 1 Trip Blank were colleeted on 09/21/2011 and were received at Accutest on 09/22/2011 properly preserved, at 1.4 Deg. C and intaet. These Samples received an Aeeutest job number of MC3836. A listing of the Laboratory Sample ID, Client Sample ID and dates of eolleetion are presented in the Results Summary Seetion of this report.

Exeept as noted below, all method specified ealibrations and quality control perfonmanee eriteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSM1414

- All samples were analyzed within the reeommended method holding time.
- Sample(s) MC3889-1MS, MC3889-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 2,2-Dichloropropane, 2-Chloroethyl vinyl ether, Carbon tetrachloride, Hexachlorobutadiene, Tetrachloroethene, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for Acrolein, 1,1,1-Trichloroethane, 1,4-Dioxane, 2,2-Dichloropropane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, Carbon tetrachloride, Dichlorodifluoromethane, Hexachlorobutadiene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for Acrolein,1,4-Dioxane, 2-Chloroethyl vinyl ether, Carbon tetrachloride, Dichlorodifluoromethane, Hexachlorobutadiene are outside control limits. Outside control limits due to possible matrix interferenee. Refer to Blank Spike.
- MSM1414-BS/MS/MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

**Matrix** SO **Batch ID:** MSK1840

- All samples were analyzed within the recommended method holding time.
- All method blanks for this bateh meet method specific criteria.
- Sample(s) MC3828-3MS, MC3828-3MSD were used as the QC samples indicated.
- Matrix Spike Recovery(s) for 2-Butanone (MEK), 2-Hexanone, Acetone, Acrolein, Trichloroethene, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interferenee. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2-Butanone (MEK), 2-Hexanone, Acrolein, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

**Matrix** SO **Batch ID:** MSK1841

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3895-4MS, MC3895-4MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Duplicate Recovery(s) for Acrolein are outside control limits. Outside control limits due to possible matrix interferenee. Refer to Blank Spike.

**Matrix** SO **Batch ID:** MSK1843

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3895-7MS, MC3895-7MSD were used as the QC samples indicated.

**Matrix** SO **Batch ID:** MSV94

- All samples were analyzed within the recommended method holding time.

## Volatiles by GCMS By Method SW846 8260B

| Matrix SO | Batch ID: MSV94 |
|---|---|

- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3836-3MS, MC3836-3MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Acetone are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,2-Dibromo-3-ehloropropane, 1,4-Dioxane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,1,2,2-Tetrachloroethane, 1,2,3-Trichloropropane, 1,2-Dibromo-3-chloropropane, 1,4-Dioxane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSV94-BS/MS/MSD for Acrolein, Acrylonitrile: Outside control limits. Associated samples are non-deteet for this compound.
- MC3836-4 for Toluene-D8, 4-Bromofluorobenzene: Outside control limits due to possible matrix interference. Confirmed by reanalysis.
- MC3836-4 has internal standard outside control limits. Outside control limits due to possible matrix interferenee. Confirmed by reanalysis.

## Volatiles by GC By Method SW846 8015

| Matrix SO | Batch ID: GBH1325 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3836-3MS, MC3836-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method speeific criteria.

## Extractables by GC By Method SW846-8015

| Matrix SO | Batch ID: OP26384 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3836-3MS, MC3836-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specifie criteria.
- RPD of OP26384-MSD for TPH (>C28-C40): Outside eontrol limits due to possible matrix interferenee.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN36258 |
|---|---|

- Sample(s) MC3836-3DUP were used as the QC samples for Solids, Percent.

The Aceutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Aceutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC3836).

New England ACCUTEST LABORATORIES



## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE30 (3-4)092111 | | |
| Lab Sample ID: | MC3836-1 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 80.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55089.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.03 g | 10.0 ml | 10.0 ul |
| Run #2 | | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 6800 | 1600 | ug/kg | |
| 107-02-8 | Acrolein | ND | 34000 | 23000 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6800 | 2700 | ug/kg | |
| 71-43-2 | Benzene | ND | 680 | 170 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 6800 | 260 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6800 | 1400 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2700 | 280 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2700 | 640 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2700 | 920 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 6800 | 1600 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 9170 | 6800 | 1700 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 1570 | 6800 | 220 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 6800 | 890 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 6800 | 1300 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2700 | 300 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2700 | 130 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6800 | 350 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6800 | 6800 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2700 | 200 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6800 | 290 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 6800 | 190 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6800 | 1500 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6800 | 6800 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2700 | 880 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2700 | 260 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2700 | 200 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2700 | 200 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2700 | 190 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2700 | 460 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2700 | 210 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2700 | 200 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2700 | 430 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE30 (3-4)092111 | | |
| Lab Sample ID: | MC3836-1 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 80.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2700 | 370 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2700 | 340 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2700 | 310 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6800 | 1600 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6800 | 250 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6800 | 260 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2700 | 1400 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2700 | 930 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 34000 | 34000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6800 | 4200 | ug/kg | |
| 100-41-4 | Ethylbenzene | 25600 | 2700 | 180 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 6800 | 6800 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6800 | 1400 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 4340 | 6800 | 220 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 1230 | 6800 | 220 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2700 | 840 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6800 | 1100 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6800 | 420 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2700 | 490 | ug/kg | |
| 91-20-3 | Naphthalene | 12700 | 6800 | 6800 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 12400 | 6800 | 220 | ug/kg | |
| 100-42-5 | Styrene | ND | 6800 | 680 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6800 | 1400 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2700 | 240 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2700 | 230 | ug/kg | |
| 108-88-3 | Toluene | ND | 6800 | 240 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6800 | 1500 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6800 | 6800 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2700 | 250 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2700 | 350 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2700 | 270 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2700 | 1300 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6800 | 280 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 78000 | 6800 | 210 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 23200 | 6800 | 250 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 6800 | 1600 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2700 | 870 | ug/kg | |
| | m,p-Xylene | 62700 | 2700 | 340 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2700 | 250 | ug/kg | |
| 1330-20-7 | Xylene (total) | 62700 | 2700 | 170 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.1

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE30 (3-4)092111 | | |
| Lab Sample ID: | MC3836-1 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 80.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 112% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 107% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 113% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE30 (3-4)092111 | | |
| Lab Sample ID: | MC3836-1 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8015 | Percent Solids: | 80.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24145.D | 1 | 09/27/11 | WS | n/a | n/a | GBH1325 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.42 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 886 | 15 | 2.9 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 97% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE30 (3-4)092111 | | |
| Lab Sample ID: | MC3836-1 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 80.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31435.D | 5 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.4 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 1200 | 100 | 76 | mg/kg | |
| | TPH (>C28-C40) | ND | 100 | 76 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 102% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE29 (25-27.5)092111 | | |
| Lab Sample ID: | MC3836-2 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 92.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55103.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.04 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 910 | 210 | ug/kg | |
| 107-02-8 | Acrolein | ND | 4600 | 3100 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 910 | 370 | ug/kg | |
| 71-43-2 | Benzene | ND | 91 | 23 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 910 | 35 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 910 | 190 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 370 | 38 | ug/kg | |
| 75-25-2 | Bromoform | ND | 370 | 86 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 370 | 120 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 910 | 220 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 910 | 230 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 910 | 30 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 910 | 120 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 910 | 180 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 370 | 41 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 370 | 17 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 910 | 48 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 910 | 910 | ug/kg | |
| 67-66-3 | Chloroform | ND | 370 | 27 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 910 | 39 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 910 | 26 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 910 | 210 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 910 | 910 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 370 | 120 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 370 | 35 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 370 | 28 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 370 | 26 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 370 | 26 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 370 | 62 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 370 | 28 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 370 | 27 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 370 | 58 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE29 (25-27.5)092111 | | |
| Lab Sample ID: | MC3836-2 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 92.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 370 | 50 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 370 | 46 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 370 | 42 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 910 | 210 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 910 | 34 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 910 | 35 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 370 | 180 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 370 | 130 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 4600 | 4600 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 910 | 570 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 370 | 24 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 910 | 910 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 910 | 190 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 910 | 29 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 910 | 30 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 370 | 110 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 910 | 150 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 910 | 56 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 370 | 66 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 910 | 910 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 910 | 30 | ug/kg | |
| 100-42-5 | Styrene | ND | 910 | 91 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 910 | 180 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 370 | 32 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 370 | 31 | ug/kg | |
| 108-88-3 | Toluene | ND | 910 | 33 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 910 | 200 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 910 | 910 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 370 | 33 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 370 | 47 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 370 | 36 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 370 | 170 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 910 | 38 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 910 | 29 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 910 | 33 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 910 | 210 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 370 | 120 | ug/kg | |
| | m,p-Xylene | ND | 370 | 46 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 370 | 34 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 370 | 23 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE29 (25-27.5)092111 | | |
| Lab Sample ID: | MC3836-2 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 92.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 105% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 105% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 109% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE29 (25-27.5)092111 | | |
| Lab Sample ID: | MC3836-2 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8015 | Percent Solids: | 92.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24144.D | 1 | 09/27/11 | WS | n/a | n/a | GBH1325 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.41 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 53.0 | 13 | 2.4 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 112% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE29 (25-27.5)092111 | | |
| Lab Sample ID: | MC3836-2 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 92.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31430.D | 1 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.1 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 954 | 18 | 14 | mg/kg | |
| | TPH (>C28-C40) | 21.8 | 18 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 102% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE28 (10-12.5)092111 | | |
| Lab Sample ID: | MC3836-3 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 90.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2146.D | 1 | 09/28/11 | AMY | n/a | n/a | MSV94 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 3.31 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 8.3 | 1.9 | ug/kg | |
| 107-02-8 | Acrolein | ND | 42 | 28 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 8.3 | 3.3 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.83 | 0.21 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 8.3 | 0.32 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 8.3 | 1.7 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 3.3 | 0.35 | ug/kg | |
| 75-25-2 | Bromoform | ND | 3.3 | 0.79 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 3.3 | 1.1 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 8.3 | 2.0 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 8.3 | 2.1 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 8.3 | 0.28 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 8.3 | 1.1 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 8.3 | 1.6 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 3.3 | 0.37 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 3.3 | 0.16 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 8.3 | 0.43 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 8.3 | 8.3 | ug/kg | |
| 67-66-3 | Chloroform | ND | 3.3 | 0.25 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 8.3 | 0.36 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 8.3 | 0.23 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 8.3 | 1.9 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 8.3 | 8.3 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 3.3 | 1.1 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 3.3 | 0.32 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 3.3 | 0.25 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 3.3 | 0.24 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 3.3 | 0.23 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 3.3 | 0.57 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 3.3 | 0.25 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 3.3 | 0.24 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 3.3 | 0.53 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE28 (10-12.5)092111 | | |
| Lab Sample ID: | MC3836-3 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 90.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 3.3 | 0.45 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 3.3 | 0.42 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 3.3 | 0.38 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 8.3 | 1.9 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 8.3 | 0.31 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 8.3 | 0.32 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 3.3 | 1.7 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 3.3 | 1.1 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 42 | 42 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 8.3 | 5.2 | ug/kg | |
| 100-41-4 | Ethylbenzene | 1.2 | 3.3 | 0.22 | ug/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 8.3 | 8.3 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 8.3 | 1.8 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 8.3 | 0.27 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 8.3 | 0.27 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 3.3 | 1.0 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 8.3 | 1.4 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 8.3 | 0.51 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 3.3 | 0.60 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 8.3 | 8.3 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 0.93 | 8.3 | 0.27 | ug/kg | J |
| 100-42-5 | Styrene | ND | 8.3 | 0.83 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 8.3 | 1.7 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 3.3 | 0.29 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 3.3 | 0.28 | ug/kg | |
| 108-88-3 | Toluene | 8.5 | 8.3 | 0.30 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 8.3 | 1.8 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 8.3 | 8.3 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 3.3 | 0.31 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 3.3 | 0.42 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 3.3 | 0.33 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 3.3 | 1.5 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 8.3 | 0.35 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.2 | 8.3 | 0.26 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 8.3 | 0.30 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 8.3 | 2.0 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 3.3 | 1.1 | ug/kg | |
| | m,p-Xylene | ND | 3.3 | 0.42 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 3.3 | 0.31 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 3.3 | 0.21 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE28 (10-12.5)092111 | | |
| Lab Sample ID: | MC3836-3 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 90.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 | 170 East Rand Ave. Hartford, IL | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE28 (10-12.5)092111 | | |
| Lab Sample ID: | MC3836-3 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8015 | Percent Solids: | 90.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24137.D | 1 | 09/26/11 | WS | n/a | n/a | GBH1325 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.75 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 12 | 2.3 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 95% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE28 (10-12.5)092111 | | |
| Lab Sample ID: | MC3836-3 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 90.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31424.D | 1 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.3 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 18 | 14 | mg/kg | |
| | TPH (>C28-C40) | ND | 18 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 88% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE8 (15-17.5)092111 | | |
| Lab Sample ID: | MC3836-4 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 95.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2162.D | 1 | 09/28/11 | AMY | n/a | n/a | MSV94 |
| Run #2 | K55152.D | 1 | 10/03/11 | GK | n/a | n/a | MSK1843 |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.76 g | 5.0 ml | |
| Run #2 | 4.72 g | 10.0 ml | 200 ul |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.5 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 28 | 19 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.5 | 2.2 | ug/kg | |
| 71-43-2 | Benzene | 18.3 J | 0.55 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.5 | 0.21 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.5 | 1.1 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.2 | 0.23 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.2 | 0.52 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.2 | 0.74 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.5 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 104 [a] | 280 | 72 | ug/kg | J |
| 135-98-8 | sec-Butylbenzene | 348 J | 5.5 | 0.18 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | 21.5 J | 5.5 | 0.72 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.5 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.2 | 0.25 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.2 | 0.10 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.5 | 0.29 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.5 | 5.5 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.2 | 0.16 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.5 | 0.24 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.5 | 0.15 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.5 | 1.2 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.5 | 5.5 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.2 | 0.72 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.2 | 0.21 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.2 | 0.17 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.2 | 0.15 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.2 | 0.38 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.2 | 0.17 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.2 | 0.16 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.2 | 0.35 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE8 (15-17.5)092111 | | |
| Lab Sample ID: | MC3836-4 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 95.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.2 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.2 | 0.28 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.2 | 0.25 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.5 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.5 | 0.20 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.5 | 0.21 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.2 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.2 | 0.75 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 28 | 28 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.5 | 3.4 | ug/kg | |
| 100-41-4 | Ethylbenzene | 6.6 J | 2.2 | 0.14 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.5 | 5.5 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.5 | 1.2 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 104 [a] | 280 | 9.0 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 115 J | 5.5 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.2 | 0.68 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.5 | 0.93 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.5 | 0.34 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.2 | 0.40 | ug/kg | |
| 91-20-3 | Naphthalene | 14.4 J | 5.5 | 5.5 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 155 [a] | 280 | 9.2 | ug/kg | J |
| 100-42-5 | Styrene | ND | 5.5 | 0.55 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.5 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.2 | 0.19 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.2 | 0.19 | ug/kg | |
| 108-88-3 | Toluene | 28.9 J | 5.5 | 0.20 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.5 | 1.2 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.5 | 5.5 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.2 | 0.28 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.2 | 0.22 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.2 | 1.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.5 | 0.23 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 91.4 J | 5.5 | 0.17 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 33.3 J | 5.5 | 0.20 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.5 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.2 | 0.71 | ug/kg | |
| | m,p-Xylene | 21.5 J | 2.2 | 0.28 | ug/kg | |
| 95-47-6 | o-Xylene | 3.8 J | 2.2 | 0.20 | ug/kg | |
| 1330-20-7 | Xylene (total) | 25.3 J | 2.2 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.4

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE8 (15-17.5)092111 | | |
| Lab Sample ID: | MC3836-4 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 95.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | 108% | 70-130% |
| 2037-26-5 | Toluene-D8 | 251% [b] | 106% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 321% [b] | 112% | 70-130% |

(a) Result is from Run# 2
(b) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.4

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE8 (15-17.5)092111 | | |
| Lab Sample ID: | MC3836-4 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8015 | Percent Solids: | 95.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24140.D | 1 | 09/26/11 | WS | n/a | n/a | GBH1325 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.72 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 13.0 | 11 | 2.2 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 105% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE8 (15-17.5)092111 | | |
| Lab Sample ID: | MC3836-4 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 95.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31434.D | 1 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.1 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 516 | 17 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 94% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP37 (6-7)092111 | | |
| Lab Sample ID: | MC3836-5 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 91.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55088.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 1.31 g | 10.0 ml | 25.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 8400 | 1900 | ug/kg | |
| 107-02-8 | Acrolein | ND | 42000 | 29000 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 8400 | 3400 | ug/kg | |
| 71-43-2 | Benzene | ND | 840 | 210 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 8400 | 320 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 8400 | 1700 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 3400 | 350 | ug/kg | |
| 75-25-2 | Bromoform | ND | 3400 | 800 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 3400 | 1100 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 8400 | 2000 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 20200 | 8400 | 2100 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 4210 | 8400 | 280 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 8400 | 1100 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 8400 | 1600 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 3400 | 380 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 3400 | 160 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 8400 | 440 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 8400 | 8400 | ug/kg | |
| 67-66-3 | Chloroform | ND | 3400 | 250 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 8400 | 360 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 8400 | 240 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 8400 | 1900 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 8400 | 8400 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 3400 | 1100 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 3400 | 320 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 3400 | 250 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 3400 | 240 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 3400 | 240 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 3400 | 580 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 3400 | 260 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 3400 | 240 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 3400 | 540 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP37 (6-7)092111 | | |
| Lab Sample ID: | MC3836-5 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 91.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 3400 | 460 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 3400 | 430 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 3400 | 380 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 8400 | 2000 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 8400 | 310 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 8400 | 320 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 3400 | 1700 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 3400 | 1200 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 42000 | 42000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 8400 | 5300 | ug/kg | |
| 100-41-4 | Ethylbenzene | 33200 | 3400 | 220 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 8400 | 8400 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 8400 | 1800 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 8140 | 8400 | 270 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 2990 | 8400 | 270 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 3400 | 1000 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 8400 | 1400 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 8400 | 520 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 3400 | 610 | ug/kg | |
| 91-20-3 | Naphthalene | 35900 | 8400 | 8400 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 21400 | 8400 | 270 | ug/kg | |
| 100-42-5 | Styrene | ND | 8400 | 840 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 8400 | 1700 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 3400 | 300 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 3400 | 280 | ug/kg | |
| 108-88-3 | Toluene | 12400 | 8400 | 300 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 8400 | 1900 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 8400 | 8400 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 3400 | 310 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 3400 | 430 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 3400 | 330 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 3400 | 1600 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 8400 | 350 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 139000 | 8400 | 270 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 36500 | 8400 | 310 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 8400 | 2000 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 3400 | 1100 | ug/kg | |
| | m,p-Xylene | 86800 | 3400 | 420 | ug/kg | |
| 95-47-6 | o-Xylene | 48300 | 3400 | 310 | ug/kg | |
| 1330-20-7 | Xylene (total) | 135000 | 3400 | 210 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.5

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP37 (6-7)092111 | | |
| Lab Sample ID: | MC3836-5 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 91.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 111% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 105% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 109% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP37 (6-7)092111 | | |
| Lab Sample ID: | MC3836-5 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8015 | Percent Solids: | 91.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24141.D | 1 | 09/27/11 | WS | n/a | n/a | GBH1325 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.00 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 499 | 11 | 2.2 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 99% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP37 (6-7)092111 | | |
| **Lab Sample ID:** | MC3836-5 | **Date Sampled:** | 09/21/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/22/11 |
| **Method:** | SW846-8015 SW846 3546 | **Percent Solids:** | 91.4 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31431.D | 1 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.2 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 615 | 18 | 14 | mg/kg | |
| | TPH (>C28-C40) | ND | 18 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 96% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE29 (25-27.5)092111 DUP | | |
| Lab Sample ID: | MC3836-6 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 90.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55087.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.56 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 800 | 180 | ug/kg | |
| 107-02-8 | Acrolein | ND | 4000 | 2700 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 800 | 320 | ug/kg | |
| 71-43-2 | Benzene | ND | 80 | 20 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 800 | 31 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 800 | 170 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 320 | 34 | ug/kg | |
| 75-25-2 | Bromoform | ND | 320 | 75 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 320 | 110 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 800 | 190 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 800 | 200 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 800 | 26 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 800 | 100 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 800 | 150 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 320 | 36 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 320 | 15 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 800 | 42 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 800 | 800 | ug/kg | |
| 67-66-3 | Chloroform | ND | 320 | 24 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 800 | 34 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 800 | 22 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 800 | 180 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 800 | 800 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 320 | 100 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 320 | 31 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 320 | 24 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 320 | 23 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 320 | 22 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 320 | 55 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 320 | 24 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 320 | 23 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 320 | 51 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE29 (25-27.5)092111 DUP | | |
| Lab Sample ID: | MC3836-6 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 90.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 320 | 43 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 320 | 40 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 320 | 36 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 800 | 190 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 800 | 29 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 800 | 31 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 320 | 160 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 320 | 110 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 4000 | 4000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 800 | 500 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 320 | 21 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 800 | 800 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 800 | 170 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 72.8 | 800 | 25 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | ND | 800 | 26 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 320 | 99 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 800 | 130 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 800 | 49 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 320 | 58 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 800 | 800 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 800 | 26 | ug/kg | |
| 100-42-5 | Styrene | ND | 800 | 80 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 800 | 160 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 320 | 28 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 320 | 27 | ug/kg | |
| 108-88-3 | Toluene | ND | 800 | 29 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 800 | 180 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 800 | 800 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 320 | 29 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 320 | 41 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 320 | 31 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 320 | 150 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 800 | 34 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 800 | 25 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 800 | 29 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 800 | 190 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 320 | 100 | ug/kg | |
| | m,p-Xylene | ND | 320 | 40 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 320 | 29 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 320 | 20 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.6

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE29 (25-27.5)092111 DUP | | |
| Lab Sample ID: | MC3836-6 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 90.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 106% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 115% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE29 (25-27.5)092111 DUP | | |
| Lab Sample ID: | MC3836-6 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8015 | Percent Solids: | 90.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24142.D | 1 | 09/27/11 | WS | n/a | n/a | GBH1325 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.60 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 108 | 16 | 3.0 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 105% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE29 (25-27.5)092111 DUP | | |
| Lab Sample ID: | MC3836-6 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 90.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31432.D | 1 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.2 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 960 | 18 | 14 | mg/kg | |
| | TPH (>C28-C40) | 21.3 | 18 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 100% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE7 (12.5-15)092111 | | |
| Lab Sample ID: | MC3836-7 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 91.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2161.D | 1 | 09/28/11 | AMY | n/a | n/a | MSV94 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.45 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~30.6~~ U | ~~6.1~~ 30.6 | 1.4 | ug/kg | |
| 107-02-8 | Acrolein | ND | 31 | 21 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6.1 | 2.5 | ug/kg | |
| 71-43-2 | Benzene | 1.4 | 0.61 | 0.15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 6.1 | 0.23 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6.1 | 1.3 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.5 | 0.26 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.5 | 0.58 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.5 | 0.83 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 6.1 | 1.5 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 6.1 | 1.5 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 6.1 | 0.20 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 6.1 | 0.80 | ug/kg | |
| 75-15-0 | Carbon disulfide | 1.7 | 6.1 | 1.2 | ug/kg | J |
| 56-23-5 | Carbon tetrachloride | ND | 2.5 | 0.28 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.5 | 0.12 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6.1 | 0.32 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6.1 | 6.1 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.5 | 0.18 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6.1 | 0.26 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 6.1 | 0.17 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6.1 | 1.4 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6.1 | 6.1 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.5 | 0.80 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.5 | 0.24 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.5 | 0.18 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.5 | 0.18 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.5 | 0.17 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.5 | 0.42 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.5 | 0.19 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.5 | 0.18 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.5 | 0.39 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.7

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE7 (12.5-15)092111 | | |
| Lab Sample ID: | MC3836-7 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 91.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.5 | 0.33 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.5 | 0.31 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.5 | 0.28 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6.1 | 1.4 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6.1 | 0.23 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6.1 | 0.24 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.5 | 1.2 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.5 | 0.84 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 31 | 31 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6.1 | 3.8 | ug/kg | |
| 100-41-4 | Ethylbenzene | 8.6 | 2.5 | 0.16 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 6.1 | 6.1 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6.1 | 1.3 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 6.1 | 0.20 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 6.1 | 0.20 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.5 | 0.76 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6.1 | 1.0 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6.1 | 0.38 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.5 | 0.44 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 6.1 | 6.1 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 2.5 | 6.1 | 0.20 | ug/kg | J |
| 100-42-5 | Styrene | ND | 6.1 | 0.61 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6.1 | 1.2 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.5 | 0.22 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.5 | 0.21 | ug/kg | |
| 108-88-3 | Toluene | 28.5 | 6.1 | 0.22 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6.1 | 1.4 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6.1 | 6.1 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.5 | 0.22 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.5 | 0.31 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.5 | 0.24 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.5 | 1.1 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6.1 | 0.26 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 8.6 | 6.1 | 0.19 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.9 | 6.1 | 0.22 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 6.1 | 1.4 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.5 | 0.79 | ug/kg | |
| | m,p-Xylene | 12.4 | 2.5 | 0.31 | ug/kg | |
| 95-47-6 | o-Xylene | 8.1 | 2.5 | 0.23 | ug/kg | |
| 1330-20-7 | Xylene (total) | 20.5 | 2.5 | 0.15 | ng/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE7 (12.5-15)092111 | | |
| Lab Sample ID: | MC3836-7 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | 91.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE7 (12.5-15)092111 | | |
| Lab Sample ID: | MC3836-7 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846 8015 | Percent Solids: | 91.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24143.D | 1 | 09/27/11 | WS | n/a | n/a | GBH1325 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.44 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 8.45 | 13 | 2.4 | mg/kg | J |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 102% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE7 (12.5-15)092111 | | |
| Lab Sample ID: | MC3836-7 | Date Sampled: | 09/21/11 |
| Matrix: | SO - Soil | Date Received: | 09/22/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 91.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31429.D | 1 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.5 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 18 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 18 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 80% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.8

| | | | |
|---|---|---|---|
| Client Sample ID: | TB092111 | | |
| Lab Sample ID: | MC3836-8 | Date Sampled: | 09/21/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M43750.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB092111 | | |
| Lab Sample ID: | MC3836-8 | Date Sampled: | 09/21/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB092111 | | |
| Lab Sample ID: | MC3836-8 | Date Sampled: | 09/21/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/22/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 91% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES

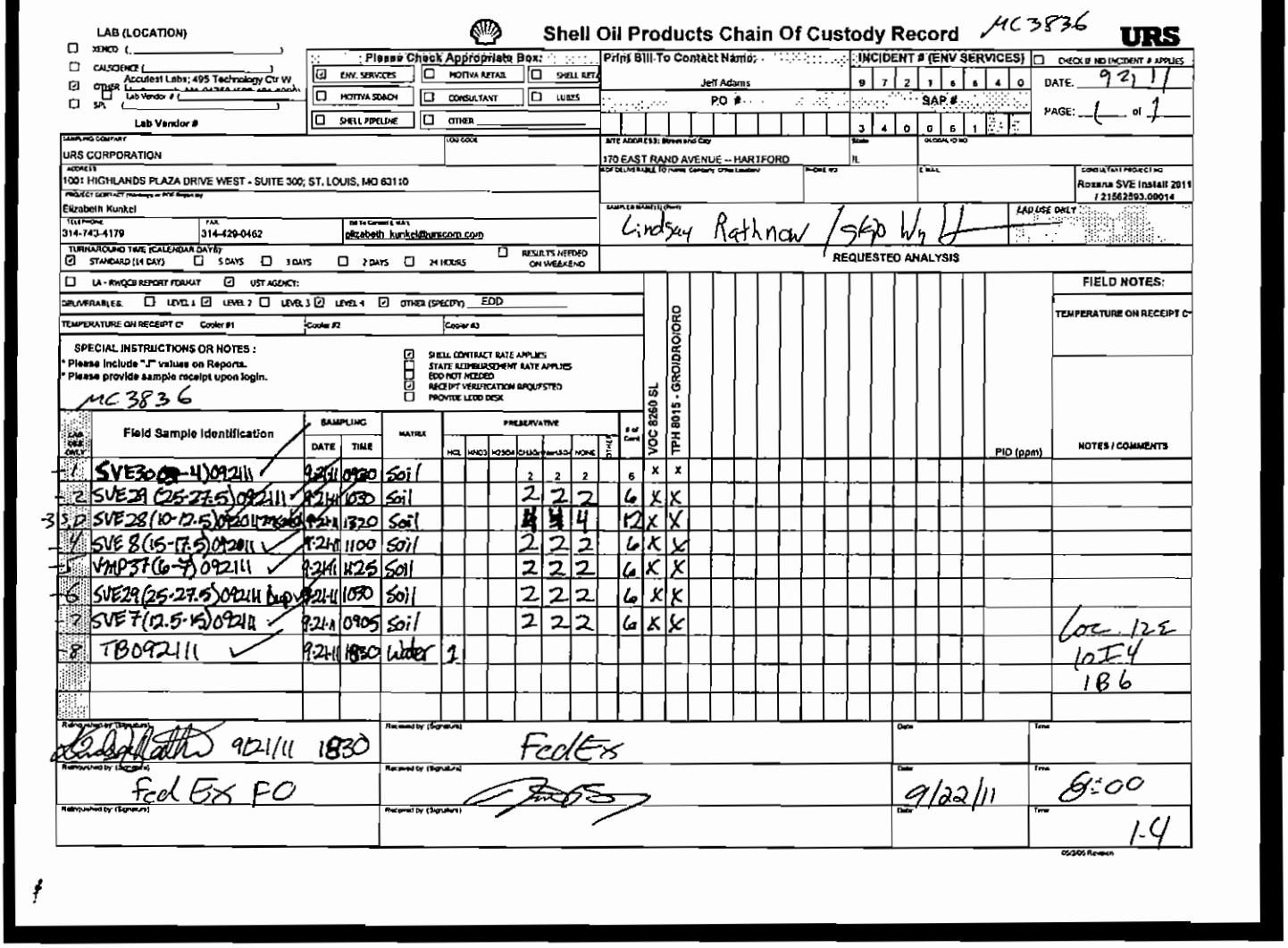


## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



LAB (LOCATION)

- ☐ XENCO ( )
- ☐ CALSCIENCE ( )
- ☑ OTHER Accutest Labs; 495 Technology Ctr W
- ☐ Lab Vendor # ( )
- ☐ SPL ( )

Lab Vendor #

# Shell Oil Products Chain Of Custody Record

MC3836

URS

Please Check Appropriate Box:

- ☑ ENV. SERVICES
- ☐ MOTIVA RETAIL
- ☐ SHELL RETA
- ☐ MOTIVA SD&CH
- ☐ CONSULTANT
- ☐ LUBES
- ☐ SHELL PIPELINE
- ☐ OTHER

Print Bill To Contact Name: Jeff Adams

PO #

INCIDENT # (ENV SERVICES): 9 7 2 1 6 6 4 0

SAP #: 3 4 0 0 6 1

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 9/21/11

PAGE: 1 of 1

SAMPLING COMPANY: URS CORPORATION

LOG CODE:

SITE ADDRESS: Street and City: 170 EAST RAND AVENUE -- HARTFORD

State: IL

GLOBAL ID NO:

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300; ST. LOUIS, MO 63110

PROJECT CONTACT (Hardcopy or PDF Report to): Elizabeth Kunkel

TELEPHONE: 314-743-4179

FAX: 314-429-0462

Bill To Contact E-MAIL: elizabeth_kunkel@urscorp.com

SAMPLER NAME(S) (Print): Lindsay Rathnow / SKP Wn

LAB USE ONLY

CONSULTANT PROJECT NO: Roxana SVE Install 2011 / 21562593.00014

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

REQUESTED ANALYSIS

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY:

DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C°: Cooler #1 Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
* Please include "J" values on Reports.
* Please provide sample receipt upon login.

MC3836

- ☑ SHELL CONTRACT RATE APPLIES
- ☐ STATE REIMBURSEMENT RATE APPLIES
- ☐ EDD NOT NEEDED
- ☑ RECEIPT VERIFICATION REQUESTED
- ☐ PROVIDE LEDD DISK

FIELD NOTES:

TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | HCL | HNO3 | H2SO4 | CH3OH | NaHSO4 | NONE | OTHER | # of Cont | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SVE30(3-4)092111 | 9-21-11 | 0930 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 2 | SVE29 (25-27.5)092111 | 9-21-11 | 1030 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 3 S,D | SVE28(10-12.5)092011 | 9-21-11 | 1320 | Soil | | | | 4 | 4 | 4 | | 12 | X | X | | |
| 4 | SVE 8(15-17.5)092011 | 9-21-11 | 1100 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 5 | VMP37(6-7)092111 | 9-21-11 | 1125 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 6 | SVE29(25-27.5)092111 Dup | 9-21-11 | 1030 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 7 | SVE7(12.5-15)092111 | 9-21-11 | 0905 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | Loc. 12E |
| 8 | TB092111 | 9-21-11 | 1830 | Water | 1 | | | | | | | | | | | 10I4 |
| | | | | | | | | | | | | | | | | 1B6 |

| Relinquished by (Signature) | Received by (Signature) | Date | Time |
|---|---|---|---|
| [signature] 9/21/11 1830 | FedEx | | |
| Fed Ex FO | [signature] | 9/22/11 | 8:00 |
| | | | 1-4 |

05/3/05 Revision

MC3836: Chain of Custody
Page 1 of 2

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC3836 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 9/22/2011 Delivery Method: Client Service Action Required at Login: No

Project: RAND No. Coolers: 1 Airbill #'s:

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2. Custody Seals Intact: | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification: | Infared gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservatio | Y or N | N/A |
|---|---|---|
| 1. Trip Blank present / cooler: | ☐ ☐ | ☑ |
| 2. Trip Blank listed on COC: | ☐ ☐ | ☑ |
| 3. Samples preserved properly: | ☑ ☐ | |
| 4. VOCs headspace free: | ☐ ☐ | ☑ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles: | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree: | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1. Sample recvd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3. Condition of sample: | Intact |

| Sample Integrity - Instructions | Y or N | N/A |
|---|---|---|
| 1. Analysis requested is clear: | ☑ ☐ | |
| 2. Bottles received for unspecified tests | ☐ ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ ☐ | |
| 4. Compositing instructions clear: | ☐ ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ ☐ | ☑ |

Comments

Accutest Laboratories
V.508.481.6200

495 Technology Center West, Bldg One
F 508.481.7753

Marlborough, MA
www.accutest.com

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**MC3836: Chain of Custody**
**Page 2 of 2**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3836

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3836-1 Collected: 21-SEP-11 09:30 By: LRSW Received: 22-SEP-11 By: SAP<br>SVE30 (3-4)092111 | | | | | | |
| MC3836-1 | SM21 2540 B MOD. | 23-SEP-11 | HS | | | %SOL |
| MC3836-1 | SW846 8015 | 27-SEP-11 03:17 | WS | | | V8015GRO |
| MC3836-1 | SW846 8260B | 28-SEP-11 21:09 | GK | | | V8260SL |
| MC3836-1 | SW846-8015 | 05-OCT-11 14:17 | KD | 26-SEP-11 | MS | B8015DROORO |
| MC3836-2 Collected: 21-SEP-11 10:30 By: LRSW Received: 22-SEP-11 By: SAP<br>SVE29 (25-27.5)092111 | | | | | | |
| MC3836-2 | SM21 2540 B MOD. | 23-SEP-11 | HS | | | %SOL |
| MC3836-2 | SW846 8015 | 27-SEP-11 02:37 | WS | | | V8015GRO |
| MC3836-2 | SW846 8260B | 29-SEP-11 16:18 | GK | | | V8260SL |
| MC3836-2 | SW846-8015 | 05-OCT-11 10:26 | KD | 26-SEP-11 | MS | B8015DROORO |
| MC3836-3 Collected: 21-SEP-11 13:20 By: LRSW Received: 22-SEP-11 By: SAP<br>SVE28 (10-12.5)092111 | | | | | | |
| MC3836-3 | SM21 2540 B MOD. | 23-SEP-11 | HS | | | %SOL |
| MC3836-3 | SW846 8015 | 26-SEP-11 21:58 | WS | | | V8015GRO |
| MC3836-3 | SW846 8260B | 28-SEP-11 12:49 | AMY | | | V8260SL |
| MC3836-3 | SW846-8015 | 05-OCT-11 05:49 | KD | 26-SEP-11 | MS | B8015DROORO |
| MC3836-4 Collected: 21-SEP-11 11:00 By: LRSW Received: 22-SEP-11 By: SAP<br>SVE8 (15-17.5)092111 | | | | | | |
| MC3836-4 | SM21 2540 B MOD. | 23-SEP-11 | HS | | | %SOL |
| MC3836-4 | SW846 8015 | 26-SEP-11 23:58 | WS | | | V8015GRO |
| MC3836-4 | SW846 8260B | 28-SEP-11 20:58 | AMY | | | V8260SL |
| MC3836-4 | SW846 8260B | 03-OCT-11 14:59 | GK | | | V8260SL |
| MC3836-4 | SW846-8015 | 05-OCT-11 13:30 | KD | 26-SEP-11 | MS | B8015DROORO |
| MC3836-5 Collected: 21-SEP-11 11:25 By: LRSW Received: 22-SEP-11 By: SAP<br>VMP37 (6-7)092111 | | | | | | |
| MC3836-5 | SM21 2540 B MOD. | 23-SEP-11 | HS | | | %SOL |
| MC3836-5 | SW846 8015 | 27-SEP-11 00:38 | WS | | | V8015GRO |
| MC3836-5 | SW846 8260B | 28-SEP-11 20:41 | GK | | | V8260SL |
| MC3836-5 | SW846-8015 | 05-OCT-11 11:12 | KD | 26-SEP-11 | MS | B8015DROORO |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3836

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3836-6 | Collected: 21-SEP-11 10:30 By: LRSW | | Received: 22-SEP-11 By: SAP | | | |
| SVE29 (25-27.5)092111 DUP | | | | | | |
| MC3836-6 | SM21 2540 B MOD. | 23-SEP-11 | HS | | | %SOL |
| MC3836-6 | SW846 8015 | 27-SEP-11 01:18 | WS | | | V8015GRO |
| MC3836-6 | SW846 8260B | 28-SEP-11 20:14 | GK | | | V8260SL |
| MC3836-6 | SW846-8015 | 05-OCT-11 11:58 | KD | 26-SEP-11 | MS | B8015DROORO |
| MC3836-7 | Collected: 21-SEP-11 09:05 By: LRSW | | Received: 22-SEP-11 By: SAP | | | |
| SVE7 (12.5-15)092111 | | | | | | |
| MC3836-7 | SM21 2540 B MOD. | 23-SEP-11 | HS | | | %SOL |
| MC3836-7 | SW846 8015 | 27-SEP-11 01:57 | WS | | | V8015GRO |
| MC3836-7 | SW846 8260B | 28-SEP-11 20:28 | AMY | | | V8260SL |
| MC3836-7 | SW846-8015 | 05-OCT-11 09:40 | KD | 26-SEP-11 | MS | B8015DROORO |
| MC3836-8 | Collected: 21-SEP-11 18:30 By: LRSW | | Received: 22-SEP-11 By: SAP | | | |
| TB092111 | | | | | | |
| MC3836-8 | SW846 8260B | 04-OCT-11 14:00 | JP | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/22/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3836-1.1 | Walk In Ref #9 | Mehdi Abdolrahim | 09/23/11 16:47 | Retrieve from Storage |
| MC3836-1.1 | Mehdi Abdolrahim | Walk In Ref #9 | 09/23/11 17:43 | Return to Storage |
| MC3836-1.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-1.2 | Walk In Ref #9 | Mahmoud Afzali | 09/26/11 15:57 | Retrieve from Storage |
| MC3836-1.2 | Mahmoud Afzali | Walk In Ref #9 | 09/27/11 09:43 | Return to Storage |
| MC3836-1.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-1.3 | VOC Ref #10 | William Shao | 09/26/11 12:59 | Retrieve from Storage |
| MC3836-1.3 | William Shao | GCBH | 09/26/11 12:59 | Load on Instrument |
| MC3836-1.3 | GCBH | William Shao | 09/26/11 12:59 | Unload from Instrument |
| MC3836-1.3 | William Shao | VOC Ref #10 | 09/26/11 15:35 | Return to Storage |
| MC3836-1.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-1.4 | VOC Ref #10 | Gary Krasinski | 09/27/11 15:16 | Retrieve from Storage |
| MC3836-1.4 | Gary Krasinski | VOC Ref #10 | 09/29/11 10:59 | Return to Storage |
| MC3836-1.4 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-2.1 | Walk In Ref #9 | Mehdi Abdolrahim | 09/23/11 16:47 | Retrieve from Storage |
| MC3836-2.1 | Mehdi Abdolrahim | Walk In Ref #9 | 09/23/11 17:43 | Return to Storage |
| MC3836-2.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-2.2 | Walk In Ref #9 | Mahmoud Afzali | 09/26/11 15:57 | Retrieve from Storage |
| MC3836-2.2 | Mahmoud Afzali | Walk In Ref #9 | 09/27/11 09:43 | Return to Storage |
| MC3836-2.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-2.3 | VOC Ref #10 | William Shao | 09/26/11 12:59 | Retrieve from Storage |
| MC3836-2.3 | William Shao | GCBH | 09/26/11 12:59 | Load on Instrument |
| MC3836-2.3 | GCBH | William Shao | 09/26/11 12:59 | Unload from Instrument |
| MC3836-2.3 | William Shao | VOC Ref #10 | 09/26/11 15:35 | Return to Storage |
| MC3836-2.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-2.4 | VOC Ref #10 | Gary Krasinski | 09/27/11 15:16 | Retrieve from Storage |
| MC3836-2.4 | Gary Krasinski | VOC Ref #10 | 10/03/11 09:52 | Return to Storage |
| MC3836-2.4 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-3.1 | Walk In Ref #9 | Mehdi Abdolrahim | 09/23/11 16:47 | Retrieve from Storage |
| MC3836-3.1 | Mehdi Abdolrahim | Walk In Ref #9 | 09/23/11 17:43 | Return to Storage |
| MC3836-3.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-3.6 | VOC Ref #10 | William Shao | 09/26/11 12:59 | Retrieve from Storage |
| MC3836-3.6 | William Shao | GCBH | 09/26/11 12:59 | Load on Instrument |
| MC3836-3.6 | GCBH | William Shao | 09/26/11 12:59 | Unload from Instrument |
| MC3836-3.6 | William Shao | VOC Ref #10 | 09/26/11 15:35 | Return to Storage |

# Accutest Internal Chain of Custody



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/22/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3836-3.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-3.7 | VOC Ref #10 | Amy Min Yang | 09/28/11 11:12 | Retrieve from Storage |
| MC3836-3.7 | Amy Min Yang | GCMSV | 09/28/11 11:12 | Load on Instrument |
| MC3836-3.7 | GCMSV | Amy Min Yang | 10/04/11 17:33 | Unload from Instrument |
| MC3836-3.7 | Amy Min Yang | VOC Ref #10 | 10/04/11 17:33 | Return to Storage |
| MC3836-3.7 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-3.9 | VOC Ref #10 | Amy Min Yang | 09/28/11 11:12 | Retrieve from Storage |
| MC3836-3.9 | Amy Min Yang | GCMSV | 09/28/11 11:12 | Load on Instrument |
| MC3836-3.9 | GCMSV | Amy Min Yang | 10/04/11 17:33 | Unload from Instrument |
| MC3836-3.9 | Amy Min Yang | VOC Ref #10 | 10/04/11 17:33 | Return to Storage |
| MC3836-3.9 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-3.10 | VOC Ref #10 | Amy Min Yang | 09/28/11 11:12 | Retrieve from Storage |
| MC3836-3.10 | Amy Min Yang | GCMSV | 09/28/11 11:12 | Load on Instrument |
| MC3836-3.10 | GCMSV | Amy Min Yang | 10/04/11 17:33 | Unload from Instrument |
| MC3836-3.10 | Amy Min Yang | VOC Ref #10 | 10/04/11 17:33 | Return to Storage |
| MC3836-3.10 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-3.11 | VOC Ref #10 | Gary Krasinski | 09/27/11 15:16 | Retrieve from Storage |
| MC3836-3.11 | Gary Krasinski | VOC Ref #10 | 09/28/11 10:36 | Return to Storage |
| MC3836-3.11 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-4.1 | Walk In Ref #9 | Mehdi Abdolrahim | 09/23/11 16:47 | Retrieve from Storage |
| MC3836-4.1 | Mehdi Abdolrahim | Walk In Ref #9 | 09/23/11 17:43 | Return to Storage |
| MC3836-4.1 | Walk In Ref #9 | Mahmoud Afzali | 09/26/11 15:55 | Retrieve from Storage |
| MC3836-4.1 | Mahmoud Afzali | Walk In Ref #9 | 09/27/11 09:43 | Return to Storage |
| MC3836-4.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-4.2 | Walk In Ref #9 | Mahmoud Afzali | 09/26/11 15:55 | Retrieve from Storage |
| MC3836-4.2 | Mahmoud Afzali | Walk In Ref #9 | 09/27/11 09:43 | Return to Storage |
| MC3836-4.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-4.4 | VOC Ref #10 | William Shao | 09/26/11 12:59 | Retrieve from Storage |
| MC3836-4.4 | William Shao | GCBH | 09/26/11 12:59 | Load on Instrument |
| MC3836-4.4 | GCBH | William Shao | 09/26/11 12:59 | Unload from Instrument |
| MC3836-4.4 | William Shao | VOC Ref #10 | 09/26/11 15:35 | Return to Storage |
| MC3836-4.4 | VOC Ref #10 | Gary Krasinski | 09/27/11 15:16 | Retrieve from Storage |
| MC3836-4.4 | Gary Krasinski | VOC Ref #10 | 09/28/11 10:36 | Return to Storage |
| MC3836-4.4 | VOC Ref #10 | Gary Krasinski | 10/03/11 13:36 | Retrieve from Storage |
| MC3836-4.4 | Gary Krasinski | VOC Ref #10 | 10/04/11 10:05 | Return to Storage |
| MC3836-4.4 | Scott Parsick | | 11/23/11 13:06 | Disposed |

# Accutest Internal Chain of Custody

Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/22/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3836-4.5 | VOC Ref #10 | Amy Min Yang | 09/28/11 11:12 | Retrieve from Storage |
| MC3836-4.5 | Amy Min Yang | GCMSV | 09/28/11 11:12 | Load on Instrument |
| MC3836-4.5 | GCMSV | Amy Min Yang | 10/04/11 17:33 | Unload from Instrument |
| MC3836-4.5 | Amy Min Yang | VOC Ref #10 | 10/04/11 17:33 | Return to Storage |
| MC3836-4.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-5.1 | Walk In Ref #9 | Mehdi Abdolrahim | 09/23/11 16:47 | Retrieve from Storage |
| MC3836-5.1 | Mehdi Abdolrahim | Walk In Ref #9 | 09/23/11 17:43 | Return to Storage |
| MC3836-5.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-5.2 | Walk In Ref #9 | Mehdi Abdolrahim | 09/23/11 16:47 | Retrieve from Storage |
| MC3836-5.2 | Mehdi Abdolrahim | Walk In Ref #9 | 09/23/11 17:43 | Return to Storage |
| MC3836-5.2 | Walk In Ref #9 | Mahmoud Afzali | 09/26/11 15:55 | Retrieve from Storage |
| MC3836-5.2 | Mahmoud Afzali | Walk In Ref #9 | 09/27/11 09:43 | Return to Storage |
| MC3836-5.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-5.3 | VOC Ref #10 | William Shao | 09/26/11 12:59 | Retrieve from Storage |
| MC3836-5.3 | William Shao | GCBH | 09/26/11 12:59 | Load on Instrument |
| MC3836-5.3 | GCBH | William Shao | 09/26/11 12:59 | Unload from Instrument |
| MC3836-5.3 | William Shao | VOC Ref #10 | 09/26/11 15:35 | Return to Storage |
| MC3836-5.3 | VOC Ref #10 | Gary Krasinski | 09/27/11 15:16 | Retrieve from Storage |
| MC3836-5.3 | Gary Krasinski | VOC Ref #10 | 09/29/11 10:59 | Return to Storage |
| MC3836-5.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-6.1 | Walk In Ref #9 | Mehdi Abdolrahim | 09/23/11 16:47 | Retrieve from Storage |
| MC3836-6.1 | Mehdi Abdolrahim | Walk In Ref #9 | 09/23/11 17:43 | Return to Storage |
| MC3836-6.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-6.3 | VOC Ref #10 | William Shao | 09/26/11 12:59 | Retrieve from Storage |
| MC3836-6.3 | William Shao | GCBH | 09/26/11 12:59 | Load on Instrument |
| MC3836-6.3 | GCBH | William Shao | 09/26/11 12:59 | Unload from Instrument |
| MC3836-6.3 | William Shao | VOC Ref #10 | 09/26/11 15:35 | Return to Storage |
| MC3836-6.3 | VOC Ref #10 | Gary Krasinski | 09/27/11 15:16 | Retrieve from Storage |
| MC3836-6.3 | Gary Krasinski | VOC Ref #10 | 09/29/11 10:59 | Return to Storage |
| MC3836-6.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-7.1 | Walk In Ref #9 | Mehdi Abdolrahim | 09/23/11 16:47 | Retrieve from Storage |
| MC3836-7.1 | Mehdi Abdolrahim | Walk In Ref #9 | 09/23/11 17:43 | Return to Storage |
| MC3836-7.1 | Walk In Ref #9 | Mahmoud Afzali | 09/26/11 15:55 | Retrieve from Storage |
| MC3836-7.1 | Mahmoud Afzali | Walk In Ref #9 | 09/27/11 09:43 | Return to Storage |
| MC3836-7.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-7.3 | VOC Ref #10 | William Shao | 09/26/11 12:59 | Retrieve from Storage |
| MC3836-7.3 | William Shao | GCBH | 09/26/11 12:59 | Load on Instrument |

# Accutest Internal Chain of Custody



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/22/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3836-7.3 | GCBH | William Shao | 09/26/11 12:59 | Unload from Instrument |
| MC3836-7.3 | William Shao | VOC Ref #10 | 09/26/11 15:35 | Return to Storage |
| MC3836-7.3 | VOC Ref #10 | Gary Krasinski | 09/27/11 15:16 | Retrieve from Storage |
| MC3836-7.3 | Gary Krasinski | VOC Ref #10 | 09/28/11 10:36 | Return to Storage |
| MC3836-7.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-7.5 | VOC Ref #10 | Amy Min Yang | 09/28/11 11:12 | Retrieve from Storage |
| MC3836-7.5 | Amy Min Yang | GCMSV | 09/28/11 11:12 | Load on Instrument |
| MC3836-7.5 | GCMSV | Amy Min Yang | 10/04/11 17:33 | Unload from Instrument |
| MC3836-7.5 | Amy Min Yang | VOC Ref #10 | 10/04/11 17:33 | Return to Storage |
| MC3836-7.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3836-8.1 | VOC Ref #1 | Dana Tyron | 10/04/11 10:59 | Retrieve from Storage |
| MC3836-8.1 | Dana Tyron | GCMSM | 10/04/11 10:59 | Load on Instrument |
| MC3836-8.1 | GCMSM | Jugal Patel | 10/06/11 09:50 | Unload from Instrument |
| MC3836-8.1 | Jugal Patel | VOC Ref #1 | 10/06/11 09:50 | Return to Storage |
| MC3836-8.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |

New England ACCUTEST LABORATORIES



## GC/MS Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV94-MB | V2143.D | 1 | 09/28/11 | AMY | n/a | n/a | MSV94 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-3, MC3836-4, MC3836-7

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary

Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV94-MB | V2143.D | 1 | 09/28/11 | AMY | n/a | n/a | MSV94 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-3, MC3836-4, MC3836-7

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV94-MB | V2143.D | 1 | 09/28/11 | AMY | n/a | n/a | MSV94 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-3, MC3836-4, MC3836-7

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 96% | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

# Method Blank Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1840-MB | K55069.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-1, MC3836-5, MC3836-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 58 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 850 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 250 | 100 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 6.3 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 9.5 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 52 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 10 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 24 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 34 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 59 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 63 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 8.3 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 33 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 48 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 11 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 4.7 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 13 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 250 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 7.4 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 11 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 7.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 56 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 250 | 250 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 33 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 100 | 9.6 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 7.5 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 7.2 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 7.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 17 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 7.6 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 7.3 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 16 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 13 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 11 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 58 | ug/kg | |

# Method Blank Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1840-MB | K55069.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-1, MC3836-5, MC3836-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 9.2 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 9.6 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 50 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 34 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 160 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 6.5 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 250 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 52 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 7.9 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.1 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 31 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 42 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 15 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 18 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 250 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 8.1 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 25 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 8.8 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 8.4 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 9.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 55 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 250 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethaue | ND | 100 | 9.2 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 13 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 9.8 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 46 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 10 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 7.9 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 9.1 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 59 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 32 | ug/kg | |
| | m,p-Xylene | ND | 100 | 13 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 9.2 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 6.3 | ug/kg | |

# Method Blank Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1840-MB | K55069.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-1, MC3836-5, MC3836-6

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dihromofluoromethane | 109% | 70-130% |
| 2037-26-5 | Toluene-D8 | 106% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 112% | 70-130% |

# Method Blank Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1841-MB | K55098.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 58 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 850 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 250 | 100 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 6.3 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 9.5 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 52 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 10 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 24 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 34 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 59 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 63 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 8.3 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 33 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 48 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 11 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 4.7 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 13 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 250 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 7.4 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 11 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 7.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 56 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 250 | 250 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 33 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 100 | 9.6 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 7.5 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 7.2 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 7.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 17 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 7.6 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 7.3 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 16 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 13 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 11 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 58 | ug/kg | |

# Method Blank Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1841-MB | K55098.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 9.2 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 9.6 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 50 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 34 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 160 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 6.5 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 250 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 52 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 7.9 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.1 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 31 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 42 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 15 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 18 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 250 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 8.1 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 25 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 8.8 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 8.4 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 9.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 55 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 250 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 9.2 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 13 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 9.8 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 46 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 10 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 7.9 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 9.1 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 59 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 32 | ug/kg | |
| | m,p-Xylene | ND | 100 | 13 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 9.2 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 6.3 | ug/kg | |

# Method Blank Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1841-MB | K55098.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-2

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 104% | 70-130% |
| 2037-26-5 | Toluene-D8 | 102% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 110% | 70-130% |

# Method Blank Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1843-MB | K55150.D | 1 | 10/03/11 | GK | n/a | n/a | MSK1843 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 104-51-8 | n-Butylbenzene | ND | 250 | 63 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 7.9 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 8.1 | ug/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 106% | 70-130% |
| 2037-26-5 | Toluene-D8 | 107% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 109% | 70-130% |

# Method Blank Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1414-MB | M43747.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-8

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |

# Method Blank Summary

Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1414-MB | M43747.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-8

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

# Method Blank Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1414-MB | M43747.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-8

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 91% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 93% | 70-130% |

# Blank Spike Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV94-BS | V2142.D | 1 | 09/28/11 | AMY | n/a | n/a | MSV94 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-3, MC3836-4, MC3836-7

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 79.5 | 159* a | 70-130 |
| 107-02-8 | Acrolein | 250 | 1310 | 524* b | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 316 | 632* b | 70-130 |
| 71-43-2 | Benzene | 50 | 55.7 | 111 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 49.6 | 99 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 51.2 | 102 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 50.7 | 101 | 70-130 |
| 75-25-2 | Bromoform | 50 | 47.0 | 94 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 53.0 | 106 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 54.9 | 110 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 58.0 | 116 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 52.8 | 106 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 50.7 | 101 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 53.6 | 107 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 48.0 | 96 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 56.8 | 114 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 61.3 | 123 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 13.9 | 28 | 10-160 |
| 67-66-3 | Chloroform | 50 | 51.5 | 103 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 53.2 | 106 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 50.0 | 100 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 51.2 | 102 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 45.3 | 91 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 51.6 | 103 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 52.4 | 105 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 54.3 | 109 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 51.1 | 102 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 50.4 | 101 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 50.4 | 101 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 56.1 | 112 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 51.8 | 104 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 57.0 | 114 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 52.0 | 104 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 53.7 | 107 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 52.9 | 106 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 51.1 | 102 | 70-130 |

# Blank Spike Summary

Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV94-BS | V2I42.D | 1 | 09/28/11 | AMY | n/a | n/a | MSV94 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-3, MC3836-4, MC3836-7

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 55.3 | 111 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 52.1 | 104 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 54.0 | 108 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 56.2 | 112 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 260 | 104 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 55.1 | 110 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 56.4 | 113 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 50.6 | 101 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 64.2 | 128 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 60.8 | 122 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 55.2 | 110 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 52.5 | 105 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 57.6 | 115 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 52.3 | 105 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 59.4 | 119 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 52.6 | 105 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 52.8 | 106 | 70-130 |
| 100-42-5 | Styrene | 50 | 55.9 | 112 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 52.6 | 105 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 52.0 | 104 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 52.7 | 105 | 70-130 |
| 108-88-3 | Toluene | 50 | 50.9 | 102 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 52.4 | 105 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 56.0 | 112 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 49.0 | 98 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 49.9 | 100 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 50.8 | 102 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 46.1 | 92 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 50.1 | 100 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 51.2 | 102 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 51.1 | 102 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 51.2 | 102 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 46.7 | 93 | 70-130 |
| | m,p-Xylene | 100 | 115 | 115 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 56.2 | 112 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 171 | 114 | 70-130 |

# Blank Spike Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV94-BS | V2142.D | 1 | 09/28/11 | AMY | n/a | n/a | MSV94 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-3, MC3836-4, MC3836-7

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 96% | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1414-BS | M43744.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-8

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 64.3 | 129 | 70-130 |
| 107-02-8 | Acrolein | 250 | 254 | 102 | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 198 | 396* a | 70-130 |
| 71-43-2 | Benzene | 50 | 52.1 | 104 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 56.8 | 114 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 55.4 | 111 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 59.2 | 118 | 70-130 |
| 75-25-2 | Bromoform | 50 | 53.8 | 108 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 52.9 | 106 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 63.9 | 128 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 56.1 | 112 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 55.5 | 111 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 53.1 | 106 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 51.7 | 103 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 68.5 | 137* b | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 57.3 | 115 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 51.0 | 102 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 21.6 | 43* b | 70-130 |
| 67-66-3 | Chloroform | 50 | 54.6 | 109 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 45.9 | 92 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 50.7 | 101 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 53.2 | 106 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 45.0 | 90 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 61.2 | 122 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 56.3 | 113 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 54.6 | 109 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 55.7 | 111 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 53.8 | 108 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 62.2 | 124 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 52.7 | 105 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 59.9 | 120 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 57.2 | 114 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 53.1 | 106 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 55.3 | 111 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 54.5 | 109 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 51.8 | 104 | 70-130 |

# Blank Spike Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1414-BS | M43744.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-8

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 66.7 | 133* b | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 60.1 | 120 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 53.7 | 107 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 58.3 | 117 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 186 | 74 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 48.3 | 97 | 77-137 |
| 100-41-4 | Ethylbenzene | 50 | 56.4 | 113 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 77.7 | 155* b | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 55.9 | 112 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 61.0 | 122 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 57.8 | 116 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 48.6 | 97 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 43.9 | 88 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 55.9 | 112 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 52.3 | 105 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 47.0 | 94 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 53.0 | 106 | 70-130 |
| 100-42-5 | Styrene | 50 | 55.2 | 110 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 60.7 | 121 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 43.1 | 86 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 65.9 | 132* b | 70-130 |
| 108-88-3 | Toluene | 50 | 57.9 | 116 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 57.3 | 115 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 61.5 | 123 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 60.0 | 120 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 55.5 | 111 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 58.0 | 116 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 59.0 | 118 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 44.2 | 88 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 52.1 | 104 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 51.5 | 103 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 34.1 | 68* b | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 46.0 | 92 | 70-130 |
| | m,p-Xylene | 100 | 120 | 120 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 59.0 | 118 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 179 | 119 | 70-130 |

# Blank Spike Summary

Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1414-BS | M43744.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-8

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 90% | 70-130% |
| 2037-26-5 | Toluene-D8 | 100% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits. Blank Spike meets program technical requirements.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1840-BS | K55067.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| MSK1840-BSD | K55068.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-1, MC3836-5, MC3836-6

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 2330 | 93 | 2650 | 106 | 13 | 70-130/25 |
| 107-02-8 | Acrolein | 12500 | 15000 | 120 | 14700 | 118 | 2 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 2500 | 2300 | 92 | 2490 | 100 | 8 | 70-130/25 |
| 71-43-2 | Benzene | 2500 | 2430 | 97 | 2370 | 95 | 3 | 70-130/25 |
| 108-86-1 | Bromobenzene | 2500 | 2470 | 99 | 2430 | 97 | 2 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 2500 | 2440 | 98 | 2420 | 97 | 1 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 2500 | 2470 | 99 | 2460 | 98 | 0 | 70-130/25 |
| 75-25-2 | Bromoform | 2500 | 2580 | 103 | 2730 | 109 | 6 | 70-130/25 |
| 74-83-9 | Bromomethane | 2500 | 2450 | 98 | 2270 | 91 | 8 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 2530 | 101 | 2840 | 114 | 12 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 2500 | 2540 | 102 | 2420 | 97 | 5 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2530 | 101 | 2400 | 96 | 5 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2440 | 98 | 2330 | 93 | 5 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 2500 | 2610 | 104 | 2470 | 99 | 6 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2460 | 98 | 2370 | 95 | 4 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 2500 | 2590 | 104 | 2550 | 102 | 2 | 70-130/25 |
| 75-00-3 | Chloroethane | 2500 | 2630 | 105 | 2490 | 100 | 5 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 1520 | 61 | 1630 | 65 | 7 | 10-160/25 |
| 67-66-3 | Chloroform | 2500 | 2390 | 96 | 2340 | 94 | 2 | 70-130/25 |
| 74-87-3 | Chloromethane | 2500 | 2370 | 95 | 2220 | 89 | 7 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2410 | 96 | 2310 | 92 | 4 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2490 | 100 | 2390 | 96 | 4 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 2500 | 2050 | 82 | 2190 | 88 | 7 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 2500 | 2680 | 107 | 2720 | 109 | 1 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 2500 | 2570 | 103 | 2650 | 106 | 3 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2510 | 100 | 2480 | 99 | 1 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2500 | 100 | 2450 | 98 | 2 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2470 | 99 | 2440 | 98 | 1 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 2440 | 98 | 2290 | 92 | 6 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2410 | 96 | 2340 | 94 | 3 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2310 | 92 | 2340 | 94 | 1 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2570 | 103 | 2460 | 98 | 4 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2360 | 94 | 2290 | 92 | 3 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2500 | 100 | 2380 | 95 | 5 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2390 | 96 | 2370 | 95 | 1 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2420 | 97 | 2550 | 102 | 5 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1840-BS | K55067.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| MSK1840-BSD | K55068.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-1, MC3836-5, MC3836-6

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2760 | 110 | 2560 | 102 | 8 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2520 | 101 | 2430 | 97 | 4 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2540 | 102 | 2510 | 100 | 1 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2660 | 106 | 2680 | 107 | 1 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 12500 | 10800 | 86 | 12800 | 102 | 17 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2410 | 96 | 2570 | 103 | 6 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 2500 | 2630 | 105 | 2580 | 103 | 2 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2400 | 96 | 2290 | 92 | 5 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 2500 | 2670 | 107 | 3110 | 124 | 15 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 2500 | 2890 | 116 | 2750 | 110 | 5 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2540 | 102 | 2450 | 98 | 4 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2310 | 92 | 2400 | 96 | 4 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 2330 | 93 | 2590 | 104 | 11 | 70-130/25 |
| 74-95-3 | Methylene bromide | 2500 | 2440 | 98 | 2460 | 98 | 1 | 70-130/25 |
| 75-09-2 | Methylene chloride | 2500 | 2510 | 100 | 2480 | 99 | 1 | 70-130/25 |
| 91-20-3 | Naphthalene | 2500 | 2120 | 85 | 2310 | 92 | 9 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 2500 | 2530 | 101 | 2410 | 96 | 5 | 70-130/25 |
| 100-42-5 | Styrene | 2500 | 2690 | 108 | 2660 | 106 | 1 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2630 | 105 | 2550 | 102 | 3 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2380 | 95 | 2520 | 101 | 6 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 2500 | 2700 | 108 | 2600 | 104 | 4 | 70-130/25 |
| 108-88-3 | Toluene | 2500 | 2530 | 101 | 2420 | 97 | 4 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 2100 | 84 | 2090 | 84 | 0 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2290 | 92 | 2320 | 93 | 1 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2440 | 98 | 2310 | 92 | 5 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2450 | 98 | 2480 | 99 | 1 | 70-130/25 |
| 79-01-6 | Trichloroethene | 2500 | 2490 | 100 | 2410 | 96 | 3 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2440 | 98 | 2280 | 91 | 7 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2370 | 95 | 2480 | 99 | 5 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2440 | 98 | 2370 | 95 | 3 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2460 | 98 | 2340 | 94 | 5 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 2500 | 1960 | 78 | 2010 | 80 | 3 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 2500 | 2340 | 94 | 2020 | 81 | 15 | 70-130/25 |
| | m,p-Xylene | 5000 | 5380 | 108 | 5240 | 105 | 3 | 70-130/25 |
| 95-47-6 | o-Xylene | 2500 | 2620 | 105 | 2540 | 102 | 3 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 7500 | 8000 | 107 | 7770 | 104 | 3 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1840-BS | K55067.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| MSK1840-BSD | K55068.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-1, MC3836-5, MC3836-6

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | 99% | 70-130% |
| 2037-26-5 | Toluene-D8 | 108% | 103% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 104% | 101% | 70-130% |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1841-BS | K55095.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| MSK1841-BSD | K55096.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-2

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 2490 | 100 | 2510 | 100 | 1 | 70-130/25 |
| 107-02-8 | Acrolein | 12500 | 14800 | 118 | 15000 | 120 | 1 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 2500 | 2410 | 96 | 2460 | 98 | 2 | 70-130/25 |
| 71-43-2 | Benzene | 2500 | 2450 | 98 | 2370 | 95 | 3 | 70-130/25 |
| 108-86-1 | Bromobenzene | 2500 | 2530 | 101 | 2460 | 98 | 3 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 2500 | 2420 | 97 | 2390 | 96 | 1 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 2500 | 2510 | 100 | 2460 | 98 | 2 | 70-130/25 |
| 75-25-2 | Bromoform | 2500 | 2750 | 110 | 2740 | 110 | 0 | 70-130/25 |
| 74-83-9 | Bromomethane | 2500 | 2350 | 94 | 2240 | 90 | 5 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 2610 | 104 | 2620 | 105 | 0 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 2500 | 2570 | 103 | 2440 | 98 | 5 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2530 | 101 | 2430 | 97 | 4 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2480 | 99 | 2360 | 94 | 5 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 2500 | 2550 | 102 | 2450 | 98 | 4 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2480 | 99 | 2360 | 94 | 5 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 2500 | 2610 | 104 | 2580 | 103 | 1 | 70-130/25 |
| 75-00-3 | Chloroethane | 2500 | 2530 | 101 | 2430 | 97 | 4 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 1480 | 59 | 1480 | 59 | 0 | 10-160/25 |
| 67-66-3 | Chloroform | 2500 | 2380 | 95 | 2320 | 93 | 3 | 70-130/25 |
| 74-87-3 | Chloromethane | 2500 | 2300 | 92 | 2200 | 88 | 4 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2410 | 96 | 2350 | 94 | 3 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2520 | 101 | 2430 | 97 | 4 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 2500 | 2200 | 88 | 2180 | 87 | 1 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 2500 | 2740 | 110 | 2730 | 109 | 0 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 2500 | 2700 | 108 | 2710 | 108 | 0 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2520 | 101 | 2490 | 100 | 1 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2550 | 102 | 2480 | 99 | 3 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2520 | 101 | 2460 | 98 | 2 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 2370 | 95 | 2210 | 88 | 7 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2370 | 95 | 2320 | 93 | 2 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2370 | 95 | 2310 | 92 | 3 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2520 | 101 | 2440 | 98 | 3 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2330 | 93 | 2270 | 91 | 3 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2470 | 99 | 2340 | 94 | 5 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2420 | 97 | 2390 | 96 | 1 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2500 | 100 | 2540 | 102 | 2 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1841-BS | K55095.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| MSK1841-BSD | K55096.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-2

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2690 | 108 | 2520 | 101 | 7 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2530 | 101 | 2410 | 96 | 5 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2550 | 102 | 2480 | 99 | 3 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2720 | 109 | 2680 | 107 | 1 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 12500 | 12500 | 100 | 12300 | 98 | 2 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2540 | 102 | 2560 | 102 | 1 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 2500 | 2660 | 106 | 2600 | 104 | 2 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2410 | 96 | 2290 | 92 | 5 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 2500 | 2820 | 113 | 2780 | 111 | 1 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 2500 | 2930 | 117 | 2800 | 112 | 5 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2550 | 102 | 2480 | 99 | 3 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2330 | 93 | 2350 | 94 | 1 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 2520 | 101 | 2500 | 100 | 1 | 70-130/25 |
| 74-95-3 | Methylene bromide | 2500 | 2510 | 100 | 2470 | 99 | 2 | 70-130/25 |
| 75-09-2 | Methylene chloride | 2500 | 2510 | 100 | 2450 | 98 | 2 | 70-130/25 |
| 91-20-3 | Naphthalene | 2500 | 2260 | 90 | 2260 | 90 | 0 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 2500 | 2540 | 102 | 2410 | 96 | 5 | 70-130/25 |
| 100-42-5 | Styrene | 2500 | 2720 | 109 | 2670 | 107 | 2 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2650 | 106 | 2600 | 104 | 2 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2510 | 100 | 2520 | 101 | 0 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 2500 | 2710 | 108 | 2590 | 104 | 5 | 70-130/25 |
| 108-88-3 | Toluene | 2500 | 2520 | 101 | 2440 | 98 | 3 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 2210 | 88 | 2130 | 85 | 4 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2350 | 94 | 2330 | 93 | 1 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2430 | 97 | 2310 | 92 | 5 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2490 | 100 | 2470 | 99 | 1 | 70-130/25 |
| 79-01-6 | Trichloroethene | 2500 | 2490 | 100 | 2420 | 97 | 3 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2400 | 96 | 2250 | 90 | 6 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2490 | 100 | 2470 | 99 | 1 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2490 | 100 | 2370 | 95 | 5 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2460 | 98 | 2360 | 94 | 4 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 2500 | 1990 | 80 | 2000 | 80 | 1 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 2500 | 2170 | 87 | 2040 | 82 | 6 | 70-130/25 |
| | m,p-Xylene | 5000 | 5380 | 108 | 5210 | 104 | 3 | 70-130/25 |
| 95-47-6 | o-Xylene | 2500 | 2640 | 106 | 2600 | 104 | 2 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 7500 | 8020 | 107 | 7810 | 104 | 3 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1841-BS | K55095.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| MSK1841-BSD | K55096.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-2

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 102% | 101% | 70-130% |
| 2037-26-5 | Toluene-D8 | 111% | 106% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 106% | 104% | 70-130% |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1843-BS | K55147.D | 1 | 10/03/11 | GK | n/a | n/a | MSK1843 |
| MSK1843-BSD | K55148.D | 1 | 10/03/11 | GK | n/a | n/a | MSK1843 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 104-51-8 | n-Butylbenzene | 2500 | 2420 | 97 | 2530 | 101 | 4 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 2500 | 2720 | 109 | 2870 | 115 | 5 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 2500 | 2390 | 96 | 2500 | 100 | 4 | 70-130/25 |

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | 102% | 70-130% |
| 2037-26-5 | Toluene-D8 | 105% | 107% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | 103% | 70-130% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3836-3MS | V2147.D | 1 | 09/28/11 | AMY | n/a | n/a | MSV94 |
| MC3836-3MSD | V2148.D | 1 | 09/28/11 | AMY | n/a | n/a | MSV94 |
| MC3836-3 | V2146.D | 1 | 09/28/11 | AMY | n/a | n/a | MSV94 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-3, MC3836-4, MC3836-7

| CAS No. | Compound | MC3836-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 57.2 | 66.2 | 116 | 67.8 | 114 | 2 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 286 | 1530 | 535* a | 1530 | 517* a | 0 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 57.2 | 351 | 614* a | 373 | 630* a | 6 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 57.2 | 60.0 | 105 | 65.1 | 110 | 8 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 57.2 | 52.2 | 91 | 57.7 | 97 | 10 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 57.2 | 58.2 | 102 | 61.7 | 104 | 6 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 57.2 | 55.2 | 97 | 59.1 | 100 | 7 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 57.2 | 60.6 | 106 | 63.7 | 108 | 5 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 57.2 | 56.8 | 99 | 59.2 | 100 | 4 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 57.2 | 96.4 | 169* b | 98.0 | 165* b | 2 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 57.2 | 60.5 | 106 | 66.9 | 113 | 10 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 57.2 | 54.9 | 96 | 61.3 | 103 | 11 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 57.2 | 52.5 | 92 | 58.9 | 99 | 11 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 57.2 | 59.7 | 104 | 62.2 | 105 | 4 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 57.2 | 51.4 | 90 | 54.8 | 93 | 6 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 57.2 | 58.8 | 103 | 62.9 | 106 | 7 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 57.2 | 67.9 | 119 | 71.2 | 120 | 5 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 57.2 | ND | 0* b | ND | 0* b | nc | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 57.2 | 56.6 | 99 | 60.1 | 101 | 6 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 57.2 | 61.0 | 107 | 66.9 | 113 | 9 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 57.2 | 51.9 | 91 | 57.7 | 97 | 11 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 57.2 | 53.0 | 93 | 58.8 | 99 | 10 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 57.2 | 79.1 | 138* b | 87.4 | 148* b | 10 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 57.2 | 58.6 | 103 | 62.4 | 105 | 6 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 57.2 | 65.1 | 114 | 68.4 | 115 | 5 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 57.2 | 56.5 | 99 | 63.0 | 106 | 11 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 57.2 | 52.7 | 92 | 58.4 | 99 | 10 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 57.2 | 52.0 | 91 | 57.6 | 97 | 10 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 57.2 | 54.9 | 96 | 57.3 | 97 | 4 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 57.2 | 61.5 | 108 | 65.7 | 111 | 7 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 57.2 | 60.4 | 106 | 63.6 | 107 | 5 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 57.2 | 62.4 | 109 | 66.1 | 112 | 6 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 57.2 | 57.1 | 100 | 60.3 | 102 | 5 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 57.2 | 58.8 | 103 | 62.0 | 105 | 5 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 57.2 | 57.3 | 100 | 61.7 | 104 | 7 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 57.2 | 60.0 | 105 | 63.6 | 107 | 6 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3836-3MS | V2147.D | 1 | 09/28/11 | AMY | n/a | n/a | MSV94 |
| MC3836-3MSD | V2148.D | 1 | 09/28/11 | AMY | n/a | n/a | MSV94 |
| MC3836-3 | V2146.D | 1 | 09/28/11 | AMY | n/a | n/a | MSV94 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-3, MC3836-4, MC3836-7

| CAS No. | Compound | MC3836-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 57.2 | 59.5 | 104 | 63.9 | 108 | 7 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 57.2 | 55.7 | 97 | 60.5 | 102 | 8 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 57.2 | 58.3 | 102 | 62.5 | 106 | 7 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 57.2 | 65.3 | 114 | 69.1 | 117 | 6 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 286 | 406 | 142* b | 419 | 141* b | 3 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 57.2 | 74.2 | 130 | 78.8 | 133 | 6 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 1.2 | J | 57.2 | 62.8 | 108 | 68.1 | 113 | 8 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 57.2 | 50.2 | 88 | 50.3 | 85 | 0 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 57.2 | 99.8 | 175* b | 105 | 177* b | 5 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 57.2 | 63.6 | 111 | 71.2 | 120 | 11 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 57.2 | 57.0 | 100 | 63.4 | 107 | 11 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 57.2 | 64.7 | 113 | 68.8 | 116 | 6 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 57.2 | 101 | 177* b | 107 | 181* b | 6 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 57.2 | 63.4 | 111 | 67.0 | 113 | 6 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 57.2 | 63.0 | 110 | 67.2 | 113 | 6 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 57.2 | 70.0 | 122 | 76.8 | 130 | 9 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 0.93 | J | 57.2 | 55.6 | 96 | 62.0 | 103 | 11 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 57.2 | 58.1 | 102 | 61.8 | 104 | 6 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 57.2 | 54.3 | 95 | 59.0 | 100 | 8 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 57.2 | 73.3 | 128 | 80.5 | 136* b | 9 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 57.2 | 55.0 | 96 | 58.6 | 99 | 6 | 70-130/30 |
| 108-88-3 | Toluene | 8.5 | | 57.2 | 58.0 | 87 | 62.4 | 91 | 7 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 57.2 | 53.1 | 93 | 57.9 | 98 | 9 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 57.2 | 56.3 | 98 | 61.3 | 103 | 9 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 57.2 | 54.0 | 94 | 57.6 | 97 | 6 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 57.2 | 60.6 | 106 | 65.0 | 110 | 7 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 57.2 | 53.9 | 94 | 57.9 | 98 | 7 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 57.2 | 51.4 | 90 | 53.9 | 91 | 5 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 57.2 | 73.5 | 129 | 80.5 | 136* b | 9 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.2 | J | 57.2 | 53.7 | 92 | 59.3 | 98 | 10 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 57.2 | 53.0 | 93 | 59.4 | 100 | 11 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 57.2 | 71.6 | 125 | 75.4 | 127 | 5 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 57.2 | 52.6 | 92 | 56.4 | 95 | 7 | 70-130/30 |
| | m,p-Xylene | ND | | 114 | 119 | 104 | 129 | 109 | 8 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 57.2 | 58.4 | 102 | 62.9 | 106 | 7 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 171 | 178 | 104 | 192 | 108 | 8 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3836-3MS | V2147.D | 1 | 09/28/11 | AMY | n/a | n/a | MSV94 |
| MC3836-3MSD | V2148.D | 1 | 09/28/11 | AMY | n/a | n/a | MSV94 |
| MC3836-3 | V2146.D | 1 | 09/28/11 | AMY | n/a | n/a | MSV94 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-3, MC3836-4, MC3836-7

| CAS No. | Surrogate Recoveries | MS | MSD | MC3836-3 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 97% | 99% | 98% | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | 97% | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 94% | 98% | 98% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3828-3MS | K55082.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| MC3828-3MSD | K55083.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| MC3828-3 | K55081.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-1, MC3836-5, MC3836-6

| CAS No. | Compound | MC3828-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 4550 | 6120 | 135* [a] | 5750 | 126 | 6 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 22700 | 31000 | 136* [a] | 31600 | 139* [a] | 2 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 4550 | 4930 | 108 | 4770 | 105 | 3 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 4550 | 4950 | 109 | 4750 | 104 | 4 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 4550 | 4920 | 108 | 4820 | 106 | 2 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 4550 | 4990 | 110 | 4770 | 105 | 5 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 4550 | 5070 | 112 | 4920 | 108 | 3 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 4550 | 5230 | 115 | 5140 | 113 | 2 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 4550 | 4680 | 103 | 4500 | 99 | 4 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 4550 | 6180 | 136* [a] | 6020 | 132* [a] | 3 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 4550 | 4910 | 108 | 4830 | 106 | 2 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 4550 | 4900 | 108 | 4780 | 105 | 2 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 4550 | 4830 | 106 | 4720 | 104 | 2 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 4550 | 5140 | 113 | 4970 | 109 | 3 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 4550 | 5030 | 111 | 4790 | 105 | 5 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 4550 | 5130 | 113 | 5030 | 111 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 4550 | 5180 | 114 | 4930 | 108 | 5 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 4550 | 3050 | 67 | 2960 | 65 | 3 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 4550 | 4960 | 109 | 4730 | 104 | 5 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 4550 | 4720 | 104 | 4710 | 104 | 0 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 4550 | 4720 | 104 | 4630 | 102 | 2 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 4550 | 4880 | 107 | 4830 | 106 | 1 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 4550 | 4450 | 98 | 4070 | 90 | 9 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 4550 | 5390 | 119 | 5310 | 117 | 1 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 4550 | 5240 | 115 | 5120 | 113 | 2 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 4550 | 4950 | 109 | 4920 | 108 | 1 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 4550 | 4940 | 109 | 4860 | 107 | 2 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 4550 | 4920 | 108 | 4820 | 106 | 2 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 4550 | 4910 | 108 | 4810 | 106 | 2 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 4550 | 4880 | 107 | 4750 | 104 | 3 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 4550 | 4990 | 110 | 4730 | 104 | 5 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 4550 | 5120 | 113 | 4980 | 110 | 3 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | 111 | J | 4550 | 4820 | 104 | 4680 | 100 | 3 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 4550 | 4910 | 108 | 4760 | 105 | 3 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 4550 | 4950 | 109 | 4780 | 105 | 3 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 4550 | 4960 | 109 | 4860 | 107 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3828-3MS | K55082.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| MC3828-3MSD | K55083.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| MC3828-3 | K55081.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-1, MC3836-5, MC3836-6

| CAS No. | Compound | MC3828-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 4550 | 5140 | 113 | 4920 | 108 | 4 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 4550 | 5030 | 111 | 4890 | 108 | 3 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 4550 | 5070 | 112 | 4900 | 108 | 3 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 4550 | 5440 | 120 | 5230 | 115 | 4 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 22700 | 24800 | 109 | 21300 | 94 | 15 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 4550 | 5080 | 112 | 4810 | 106 | 5 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 4550 | 5160 | 113 | 5110 | 112 | 1 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 4550 | 4830 | 106 | 4670 | 103 | 3 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 4550 | 7630 | 168* [a] | 7520 | 165* [a] | 1 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 4550 | 5690 | 125 | 5540 | 122 | 3 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 4550 | 4940 | 109 | 4870 | 107 | 1 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 4550 | 4760 | 105 | 4660 | 102 | 2 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 4550 | 5430 | 119 | 5100 | 112 | 6 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 4550 | 5100 | 112 | 4900 | 108 | 4 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 4550 | 5090 | 112 | 5000 | 110 | 2 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 4550 | 4470 | 98 | 4270 | 94 | 5 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 4550 | 4930 | 108 | 4810 | 106 | 2 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 4550 | 5280 | 116 | 5240 | 115 | 1 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 4550 | 5150 | 113 | 5140 | 113 | 0 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 4550 | 4020 | 88 | 3720 | 82 | 8 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | 195 | | 4550 | 5390 | 114 | 5310 | 112 | 1 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 4550 | 5110 | 112 | 4940 | 109 | 3 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 4550 | 4420 | 97 | 4170 | 92 | 6 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 4550 | 4620 | 102 | 4480 | 99 | 3 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 4550 | 4990 | 110 | 4750 | 104 | 5 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 4550 | 5040 | 111 | 4860 | 107 | 4 | 70-130/30 |
| 79-01-6 | Trichloroethene | 4020 | | 4550 | 10100 | 134* [a] | 9850 | 128 | 3 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 4550 | 4910 | 108 | 4710 | 104 | 4 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 4550 | 4790 | 105 | 4620 | 102 | 4 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 4550 | 4920 | 108 | 4810 | 106 | 2 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 4550 | 4820 | 106 | 4710 | 104 | 2 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 4550 | 473 | 10* [a] | 364 | 8* [a] | 26 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 4550 | 4020 | 88 | 4140 | 91 | 3 | 70-130/30 |
| | m,p-Xylene | ND | | 9090 | 10500 | 115 | 10400 | 114 | 1 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 4550 | 5140 | 113 | 5180 | 114 | 1 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 13600 | 15700 | 115 | 15500 | 114 | 1 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3828-3MS | K55082.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| MC3828-3MSD | K55083.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |
| MC3828-3 | K55081.D | 1 | 09/28/11 | GK | n/a | n/a | MSK1840 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-1, MC3836-5, MC3836-6

| CAS No. | Surrogate Recoveries | MS | MSD | MC3828-3 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 103% | 97% | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 111% | 107% | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 107% | 103% | 105% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3895-4MS | K55107.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| MC3895-4MSD | K55108.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| MC3895-4 | K55099.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-2

| CAS No. | Compound | MC3895-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 3830 | 3610 | 94 | 3900 | 102 | 8 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 19100 | 24400 | 127 | 25000 | 131* [a] | 2 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 3830 | 3770 | 98 | 3810 | 99 | 1 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 3830 | 3620 | 95 | 3910 | 102 | 8 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 3830 | 3710 | 97 | 3960 | 103 | 7 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 3830 | 3660 | 96 | 3890 | 102 | 6 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 3830 | 3670 | 96 | 3980 | 104 | 8 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 3830 | 4070 | 106 | 4120 | 108 | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 3830 | 3410 | 89 | 3810 | 99 | 11 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 3830 | 3840 | 100 | 3930 | 103 | 2 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 3830 | 3720 | 97 | 4000 | 104 | 7 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 3830 | 3710 | 97 | 3950 | 103 | 6 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 3830 | 3620 | 95 | 3890 | 102 | 7 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 3830 | 3790 | 99 | 4150 | 108 | 9 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 3830 | 3630 | 95 | 3950 | 103 | 8 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 3830 | 3880 | 101 | 4120 | 108 | 6 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 3830 | 3740 | 98 | 4160 | 109 | 11 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 3830 | 2170 | 57 | 2210 | 58 | 2 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 3830 | 3540 | 92 | 3800 | 99 | 7 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 3830 | 3410 | 89 | 3750 | 98 | 9 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 3830 | 3570 | 93 | 3820 | 100 | 7 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 3830 | 3680 | 96 | 3930 | 103 | 7 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 3830 | 3240 | 85 | 3360 | 88 | 4 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 3830 | 4090 | 107 | 4270 | 111 | 4 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 3830 | 4020 | 105 | 4180 | 109 | 4 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 3830 | 3740 | 98 | 4020 | 105 | 7 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 3830 | 3730 | 97 | 3980 | 104 | 6 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 3830 | 3720 | 97 | 3990 | 104 | 7 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 3830 | 3570 | 93 | 3920 | 102 | 9 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 3830 | 3540 | 92 | 3860 | 101 | 9 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 3830 | 3480 | 91 | 3710 | 97 | 6 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 3830 | 3790 | 99 | 4140 | 108 | 9 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 3830 | 3460 | 90 | 3740 | 98 | 8 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 3830 | 3620 | 95 | 3950 | 103 | 9 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 3830 | 3560 | 93 | 3840 | 100 | 8 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 3830 | 3790 | 99 | 3980 | 104 | 5 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3895-4MS | K55107.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| MC3895-4MSD | K55108.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| MC3895-4 | K55099.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-2

| CAS No. | Compound | MC3895-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 3830 | 3850 | 101 | 4080 | 107 | 6 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 3830 | 3640 | 95 | 3990 | 104 | 9 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 3830 | 3710 | 97 | 3960 | 103 | 7 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 3830 | 3940 | 103 | 4210 | 110 | 7 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 19100 | 18700 | 98 | 18800 | 98 | 1 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 3830 | 3840 | 100 | 3910 | 102 | 2 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 3830 | 3910 | 102 | 4190 | 109 | 7 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 3830 | 3510 | 92 | 3810 | 99 | 8 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 3830 | 4030 | 105 | 4050 | 106 | 0 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 3830 | 4250 | 111 | 4590 | 120 | 8 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 3830 | 3720 | 97 | 4030 | 105 | 8 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 3830 | 3630 | 95 | 3760 | 98 | 4 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 3830 | 3880 | 101 | 3910 | 102 | 1 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 3830 | 3690 | 96 | 3880 | 101 | 5 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 3830 | 3760 | 98 | 4010 | 105 | 6 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 3830 | 3420 | 89 | 3520 | 92 | 3 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 3830 | 3690 | 96 | 3990 | 104 | 8 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 3830 | 4000 | 104 | 4270 | 111 | 7 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 3830 | 3930 | 103 | 4140 | 108 | 5 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 3830 | 3780 | 99 | 3840 | 100 | 2 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 3830 | 3900 | 102 | 4210 | 110 | 8 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 3830 | 3690 | 96 | 3960 | 103 | 7 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 3830 | 3220 | 84 | 3520 | 92 | 9 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 3830 | 3510 | 92 | 3700 | 97 | 5 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 3830 | 3590 | 94 | 3900 | 102 | 8 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 3830 | 3680 | 96 | 3930 | 103 | 7 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 3830 | 3660 | 96 | 4000 | 104 | 9 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 3830 | 3590 | 94 | 3960 | 103 | 10 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 3830 | 3720 | 97 | 3760 | 98 | 1 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 3830 | 3660 | 96 | 3890 | 102 | 6 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 3830 | 3590 | 94 | 3880 | 101 | 8 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 3830 | 2980 | 78 | 3040 | 79 | 2 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 3830 | 2970 | 78 | 3410 | 89 | 14 | 70-130/30 |
| | m,p-Xylene | ND | | 7660 | 7910 | 103 | 8360 | 109 | 6 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 3830 | 3870 | 101 | 4120 | 108 | 6 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 11500 | 11800 | 103 | 12500 | 109 | 6 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3895-4MS | K55107.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| MC3895-4MSD | K55108.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| MC3895-4 | K55099.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-2

| CAS No. | Surrogate Recoveries | MS | MSD | MC3895-4 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 95% | 101% | 97% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 107% | 94% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | 103% | 103% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3895-7MS | K55166.D | 1 | 10/03/11 | GK | n/a | n/a | MSK1843 |
| MC3895-7MSD | K55167.D | 1 | 10/03/11 | GK | n/a | n/a | MSK1843 |
| MC3895-7 | K55165.D | 1 | 10/03/11 | GK | n/a | n/a | MSK1843 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-4

| CAS No. | Compound | MC3895-7 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 104-51-8 | n-Butylbenzene | ND | | 4420 | 4490 | 101 | 4920 | 111 | 9 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 4420 | 4500 | 102 | 4910 | 111 | 9 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 4420 | 4490 | 101 | 4900 | 111 | 9 | 70-130/30 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3895-7 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | 106% | 109% | 70-130% |
| 2037-26-5 | Toluene-D8 | 102% | 111% | 105% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 100% | 108% | 113% | 70-130% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3889-1MS | M43757.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |
| MC3889-1MSD | M43758.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |
| MC3889-1 | M43756.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |

5.4.5

The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-8

| CAS No. | Compound | MC3889-1 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 50 | 39.0 | 78 | 39.6 | 79 | 2 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 250 | 636 | 254* [a] | 641 | 256* [a] | 1 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 50 | 215 | 430* [b] | 218 | 436* [b] | 1 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 50 | 53.8 | 108 | 53.0 | 106 | 1 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 50 | 53.7 | 107 | 53.4 | 107 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 50 | 58.3 | 117 | 57.0 | 114 | 2 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 50 | 61.5 | 123 | 60.1 | 120 | 2 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 50 | 50.7 | 101 | 50.3 | 101 | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 50 | 56.3 | 113 | 55.2 | 110 | 2 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 50 | 67.0 | 134* [a] | 62.5 | 125 | 7 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 50 | 56.6 | 113 | 54.3 | 109 | 4 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 50 | 56.5 | 113 | 54.8 | 110 | 3 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 50 | 54.9 | 110 | 53.7 | 107 | 2 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 50 | 56.4 | 113 | 53.1 | 106 | 6 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 50 | 68.4 | 137* [a] | 65.5 | 131* [a] | 4 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 50 | 56.1 | 112 | 54.6 | 109 | 3 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 50 | 56.8 | 114 | 55.3 | 111 | 3 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 50 | ND | 0* [a] | ND | 0* [a] | nc | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 50 | 59.0 | 118 | 55.7 | 111 | 6 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 50 | 51.9 | 104 | 52.8 | 106 | 2 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 50 | 52.1 | 104 | 50.3 | 101 | 4 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 50 | 53.6 | 107 | 52.4 | 105 | 2 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 50 | 45.8 | 92 | 47.1 | 94 | 3 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 50 | 59.7 | 119 | 58.4 | 117 | 2 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 50 | 52.9 | 106 | 52.8 | 106 | 0 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 50 | 54.2 | 108 | 52.8 | 106 | 3 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 50 | 54.7 | 109 | 53.1 | 106 | 3 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 50 | 53.2 | 106 | 52.2 | 104 | 2 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 50 | 68.8 | 138* [a] | 65.8 | 132* [a] | 4 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 50 | 59.0 | 118 | 55.5 | 111 | 6 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 50 | 62.3 | 125 | 60.0 | 120 | 4 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 50 | 60.4 | 121 | 57.3 | 115 | 5 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 50 | 56.6 | 113 | 54.6 | 109 | 4 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 50 | 58.8 | 118 | 56.2 | 112 | 5 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 50 | 57.5 | 115 | 56.5 | 113 | 2 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 50 | 52.5 | 105 | 51.6 | 103 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3889-1MS | M43757.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |
| MC3889-1MSD | M43758.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |
| MC3889-1 | M43756.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-8

| CAS No. | Compound | MC3889-1 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 50 | 65.3 | 131* [a] | 60.9 | 122 | 7 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 50 | 62.0 | 124 | 59.1 | 118 | 5 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 50 | 53.4 | 107 | 52.9 | 106 | 1 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 50 | 57.9 | 116 | 56.5 | 113 | 2 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 250 | 163 | 65* [a] | 168 | 67* [a] | 3 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 50 | 47.9 | 96 | 48.3 | 97 | 1 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 50 | 55.2 | 110 | 54.2 | 108 | 2 | 70-130/30 |
| 87-68-3 | Hexachlorohutadiene | ND | | 50 | 71.9 | 144* [a] | 69.6 | 139* [a] | 3 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 50 | 43.4 | 87 | 44.4 | 89 | 2 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 50 | 62.0 | 124 | 61.1 | 122 | 1 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 50 | 58.6 | 117 | 56.5 | 113 | 4 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 50 | 52.3 | 105 | 51.8 | 104 | 1 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 50 | 45.6 | 91 | 46.7 | 93 | 2 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 50 | 57.2 | 114 | 56.0 | 112 | 2 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 50 | 56.8 | 114 | 54.0 | 108 | 5 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 50 | 46.4 | 93 | 47.1 | 94 | 1 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 50 | 53.9 | 108 | 52.2 | 104 | 3 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 50 | 53.1 | 106 | 51.8 | 104 | 2 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 50 | 59.8 | 120 | 57.9 | 116 | 3 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 50 | 44.0 | 88 | 44.4 | 89 | 1 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 50 | 61.7 | 123 | 59.4 | 119 | 4 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 50 | 59.2 | 118 | 58.0 | 116 | 2 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 50 | 54.9 | 110 | 55.4 | 111 | 1 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 50 | 58.7 | 117 | 58.9 | 118 | 0 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 50 | 65.6 | 131* [a] | 61.5 | 123 | 6 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 50 | 56.3 | 113 | 55.1 | 110 | 2 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 50 | 59.6 | 119 | 57.3 | 115 | 4 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 50 | 64.4 | 129 | 60.8 | 122 | 6 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 50 | 44.4 | 89 | 45.5 | 91 | 2 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 50 | 52.4 | 105 | 51.2 | 102 | 2 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 50 | 53.0 | 106 | 51.0 | 102 | 4 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 50 | 35.7 | 71 | 35.0 | 70 | 2 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 50 | 52.1 | 104 | 52.3 | 105 | 0 | 70-130/30 |
| | m,p-Xylene | ND | | 100 | 117 | 117 | 114 | 114 | 3 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 50 | 58.2 | 116 | 57.1 | 114 | 2 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 150 | 175 | 117 | 171 | 114 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3889-1MS | M43757.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |
| MC3889-1MSD | M43758.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |
| MC3889-1 | M43756.D | 1 | 10/04/11 | JP | n/a | n/a | MSM1414 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3836-8

| CAS No. | Surrogate Recoveries | MS | MSD | MC3889-1 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 95% | 92% | 96% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 97% | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 94% | 94% | 95% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Volatile Internal Standard Area Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSK1840-CC1831 | Injection Date: | 09/28/11 |
| Lab File ID: | K55066.D | Injection Time: | 10:38 |
| Instrument ID: | GCMSK | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 299034 | 8.86 | 389287 | 9.71 | 186592 | 12.97 | 217493 | 15.53 | 90720 | 6.48 |
| Upper Limit [a] | 598068 | 9.36 | 778574 | 10.21 | 373184 | 13.47 | 434986 | 16.03 | 181440 | 6.98 |
| Lower Limit [b] | 149517 | 8.36 | 194644 | 9.21 | 93296 | 12.47 | 108747 | 15.03 | 45360 | 5.98 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSK1840-BS | 301545 | 8.86 | 391734 | 9.71 | 189825 | 12.97 | 221279 | 15.53 | 85015 | 6.48 |
| MSK1840-BSD | 303916 | 8.87 | 393498 | 9.71 | 188834 | 12.97 | 225717 | 15.53 | 103296 | 6.48 |
| MSK1840-MB | 309161 | 8.87 | 417030 | 9.72 | 189437 | 12.97 | 213631 | 15.53 | 94123 | 6.48 |
| ZZZZZZ | 291231 | 8.86 | 391800 | 9.71 | 179761 | 12.97 | 203313 | 15.53 | 85531 | 6.50 |
| ZZZZZZ | 292496 | 8.86 | 393894 | 9.71 | 183269 | 12.97 | 208380 | 15.53 | 80117 | 6.49 |
| ZZZZZZ | 295577 | 8.86 | 400926 | 9.71 | 185414 | 12.97 | 212657 | 15.53 | 99341 | 6.50 |
| ZZZZZZ | 289621 | 8.87 | 391285 | 9.71 | 176997 | 12.97 | 193509 | 15.53 | 80803 | 6.48 |
| ZZZZZZ | 294403 | 8.86 | 394792 | 9.71 | 183741 | 12.97 | 202291 | 15.53 | 94985 | 6.48 |
| ZZZZZZ | 288067 | 8.87 | 390508 | 9.72 | 179624 | 12.97 | 192582 | 15.53 | 86443 | 6.48 |
| MC3828-3 | 289457 | 8.86 | 388734 | 9.71 | 178242 | 12.97 | 200203 | 15.53 | 87039 | 6.48 |
| MC3828-3MS | 280836 | 8.87 | 362891 | 9.71 | 180126 | 12.97 | 210233 | 15.53 | 89471 | 6.48 |
| MC3828-3MSD | 287591 | 8.86 | 374643 | 9.71 | 180970 | 12.97 | 213966 | 15.53 | 84406 | 6.48 |
| ZZZZZZ | 301933 | 8.87 | 408135 | 9.72 | 187366 | 12.97 | 207869 | 15.53 | 91295 | 6.48 |
| ZZZZZZ | 297121 | 8.86 | 402900 | 9.71 | 184703 | 12.97 | 205206 | 15.53 | 86781 | 6.48 |
| ZZZZZZ | 294039 | 8.86 | 391105 | 9.71 | 181784 | 12.97 | 208102 | 15.53 | 87543 | 6.48 |
| MC3836-6 | 294548 | 8.86 | 391657 | 9.71 | 180724 | 12.97 | 209806 | 15.53 | 88010 | 6.48 |
| MC3836-5 | 298525 | 8.87 | 405963 | 9.71 | 185379 | 12.97 | 215640 | 15.53 | 94023 | 6.48 |
| MC3836-1 | 303170 | 8.87 | 406142 | 9.72 | 184745 | 12.97 | 215000 | 15.53 | 93970 | 6.48 |
| ZZZZZZ | 296433 | 8.87 | 385741 | 9.72 | 183325 | 12.97 | 220765 | 15.53 | 94047 | 6.48 |
| ZZZZZZ | 308773 | 8.86 | 411223 | 9.71 | 187124 | 12.97 | 214925 | 15.53 | 92701 | 6.48 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSK1841-CC1831 | Injection Date: | 09/29/11 |
| Lab File ID: | K55094.D | Injection Time: | 12:10 |
| Instrument ID: | GCMSK | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 290580 | 8.86 | 378648 | 9.71 | 182225 | 12.97 | 215801 | 15.53 | 91060 | 6.48 |
| Upper Limit [a] | 581160 | 9.36 | 757296 | 10.21 | 364450 | 13.47 | 431602 | 16.03 | 182120 | 6.98 |
| Lower Limit [b] | 145290 | 8.36 | 189324 | 9.21 | 91113 | 12.47 | 107901 | 15.03 | 45530 | 5.98 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSK1841-BS | 304190 | 8.86 | 390128 | 9.71 | 188148 | 12.97 | 220928 | 15.53 | 95125 | 6.48 |
| MSK1841-BSD | 302310 | 8.87 | 389096 | 9.72 | 186314 | 12.97 | 220191 | 15.53 | 96128 | 6.48 |
| MSK1841-MB | 305857 | 8.87 | 410513 | 9.72 | 188336 | 12.98 | 209975 | 15.53 | 96227 | 6.49 |
| MC3895-4 | 308928 | 8.87 | 416244 | 9.72 | 188689 | 12.97 | 205440 | 15.53 | 85672 | 6.48 |
| ZZZZZZ | 307084 | 8.87 | 415619 | 9.72 | 192595 | 12.98 | 212565 | 15.53 | 93153 | 6.48 |
| ZZZZZZ | 289565 | 8.87 | 387302 | 9.72 | 180279 | 12.97 | 202561 | 15.53 | 87075 | 6.48 |
| ZZZZZZ | 290437 | 8.87 | 380586 | 9.71 | 170252 | 12.97 | 212909 | 15.53 | 90790 | 6.48 |
| MC3836-2 | 309320 | 8.87 | 417630 | 9.72 | 188193 | 12.97 | 221205 | 15.53 | 93929 | 6.48 |
| ZZZZZZ | 309955 | 8.87 | 414219 | 9.72 | 190147 | 12.97 | 220752 | 15.53 | 90475 | 6.48 |
| ZZZZZZ | 298453 | 8.87 | 403104 | 9.72 | 181070 | 12.97 | 211211 | 15.53 | 81968 | 6.48 |
| ZZZZZZ | 301836 | 8.87 | 407094 | 9.72 | 186522 | 12.97 | 213830 | 15.53 | 83875 | 6.48 |
| MC3895-4MS | 305746 | 8.87 | 399854 | 9.72 | 190433 | 12.97 | 225294 | 15.53 | 99623 | 6.48 |
| MC3895-4MSD | 288745 | 8.87 | 377213 | 9.71 | 183093 | 12.97 | 214637 | 15.53 | 84593 | 6.48 |
| ZZZZZZ | 298724 | 8.86 | 402828 | 9.71 | 183467 | 12.97 | 218032 | 15.53 | 96512 | 6.48 |
| ZZZZZZ | 302332 | 8.87 | 402479 | 9.71 | 183871 | 12.97 | 220032 | 15.53 | 97296 | 6.48 |
| ZZZZZZ | 308531 | 8.87 | 410123 | 9.72 | 185977 | 12.97 | 215611 | 15.53 | 88859 | 6.47 |
| ZZZZZZ | 305824 | 8.87 | 405206 | 9.72 | 176586 | 12.97 | 212469 | 15.53 | 82007 | 6.48 |
| ZZZZZZ | 304405 | 8.87 | 406997 | 9.72 | 181461 | 12.97 | 208589 | 15.53 | 79194 | 6.48 |
| ZZZZZZ | 292286 | 8.87 | 385651 | 9.72 | 180424 | 12.97 | 216026 | 15.53 | 91452 | 6.48 |
| ZZZZZZ | 314752 | 8.86 | 422863 | 9.71 | 189855 | 12.97 | 223464 | 15.53 | 92773 | 6.48 |
| ZZZZZZ | 310002 | 8.87 | 415532 | 9.71 | 189400 | 12.97 | 214078 | 15.53 | 89591 | 6.48 |
| ZZZZZZ | 300179 | 8.86 | 401443 | 9.71 | 184205 | 12.97 | 203200 | 15.53 | 85338 | 6.48 |
| ZZZZZZ | 298074 | 8.86 | 399053 | 9.71 | 184040 | 12.97 | 203451 | 15.53 | 85949 | 6.48 |
| ZZZZZZ | 297863 | 8.86 | 403050 | 9.71 | 183178 | 12.97 | 211816 | 15.53 | 84685 | 6.50 |
| ZZZZZZ | 286130 | 8.87 | 381848 | 9.72 | 174211 | 12.97 | 205807 | 15.53 | 83318 | 6.48 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSK1843-CC1831 | Injection Date: | 10/03/11 |
| Lab File ID: | K55146.D | Injection Time: | 12:14 |
| Instrument ID: | GCMSK | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 286847 | 8.86 | 372582 | 9.71 | 176669 | 12.97 | 213488 | 15.53 | 84179 | 6.48 |
| Upper Limit [a] | 573694 | 9.36 | 745164 | 10.21 | 353338 | 13.47 | 426976 | 16.03 | 168358 | 6.98 |
| Lower Limit [b] | 143424 | 8.36 | 186291 | 9.21 | 88335 | 12.47 | 106744 | 15.03 | 42090 | 5.98 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSK1843-BS | 288282 | 8.86 | 370919 | 9.71 | 177762 | 12.97 | 214328 | 15.53 | 84180 | 6.48 |
| MSK1843-BSD | 287688 | 8.86 | 373704 | 9.71 | 176908 | 12.97 | 213808 | 15.53 | 84902 | 6.48 |
| MSK1843-MB | 295772 | 8.86 | 389280 | 9.71 | 177172 | 12.97 | 205519 | 15.53 | 87893 | 6.48 |
| ZZZZZZ | 294778 | 8.86 | 390820 | 9.71 | 178819 | 12.97 | 208006 | 15.53 | 86486 | 6.50 |
| MC3836-4 | 287528 | 8.86 | 391900 | 9.71 | 175239 | 12.97 | 209595 | 15.53 | 86664 | 6.50 |
| ZZZZZZ | 295536 | 8.86 | 396021 | 9.71 | 178741 | 12.97 | 210144 | 15.53 | 89231 | 6.49 |
| ZZZZZZ | 294670 | 8.86 | 400631 | 9.71 | 181390 | 12.97 | 208549 | 15.53 | 93992 | 6.48 |
| ZZZZZZ | 299199 | 8.86 | 406612 | 9.71 | 179862 | 12.97 | 208830 | 15.53 | 91318 | 6.47 |
| ZZZZZZ | 299090 | 8.86 | 399719 | 9.71 | 180062 | 12.97 | 203470 | 15.53 | 91433 | 6.48 |
| ZZZZZZ | 301260 | 8.86 | 404649 | 9.71 | 180796 | 12.97 | 212389 | 15.53 | 88376 | 6.48 |
| ZZZZZZ | 298955 | 8.86 | 400791 | 9.71 | 175219 | 12.97 | 208285 | 15.53 | 86744 | 6.48 |
| ZZZZZZ | 300721 | 8.86 | 396192 | 9.71 | 180370 | 12.97 | 204732 | 15.53 | 83861 | 6.48 |
| ZZZZZZ | 296538 | 8.86 | 396395 | 9.71 | 178823 | 12.97 | 205435 | 15.53 | 86050 | 6.48 |
| ZZZZZZ | 291598 | 8.86 | 392019 | 9.71 | 177179 | 12.97 | 207664 | 15.53 | 84680 | 6.47 |
| ZZZZZZ | 291303 | 8.86 | 390581 | 9.71 | 178233 | 12.97 | 203724 | 15.53 | 83223 | 6.48 |
| ZZZZZZ | 288327 | 8.86 | 387315 | 9.71 | 175702 | 12.97 | 198582 | 15.53 | 83961 | 6.47 |
| ZZZZZZ | 282797 | 8.86 | 383580 | 9.71 | 175777 | 12.97 | 196518 | 15.53 | 81561 | 6.48 |
| MC3895-7 | 282325 | 8.86 | 382339 | 9.71 | 173684 | 12.97 | 192775 | 15.53 | 79622 | 6.48 |
| MC3895-7MS | 281277 | 8.86 | 373814 | 9.71 | 182394 | 12.97 | 213673 | 15.53 | 82393 | 6.47 |
| MC3895-7MSD | 275851 | 8.86 | 362595 | 9.71 | 175197 | 12.97 | 204678 | 15.53 | 81482 | 6.47 |
| ZZZZZZ | 289912 | 8.86 | 389741 | 9.71 | 177404 | 12.97 | 209330 | 15.53 | 82691 | 6.47 |
| ZZZZZZ | 295084 | 8.86 | 398149 | 9.71 | 182587 | 12.97 | 213504 | 15.53 | 86060 | 6.48 |
| ZZZZZZ | 297666 | 8.86 | 401955 | 9.71 | 181605 | 12.97 | 212945 | 15.53 | 85853 | 6.48 |
| ZZZZZZ | 296736 | 8.86 | 400188 | 9.71 | 182299 | 12.97 | 210034 | 15.53 | 84380 | 6.48 |
| ZZZZZZ | 295329 | 8.86 | 398675 | 9.71 | 179856 | 12.97 | 210240 | 15.53 | 84527 | 6.48 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1414-CC1370 | Injection Date: | 10/04/11 |
| Lab File ID: | M43743.D | Injection Time: | 10:33 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 80213 | 9.19 | 119256 | 10.07 | 60933 | 13.34 | 79280 | 15.90 | 20631 | 6.74 |
| Upper Limit [a] | 160426 | 9.69 | 238512 | 10.57 | 121866 | 13.84 | 158560 | 16.40 | 41262 | 7.24 |
| Lower Limit [b] | 40107 | 8.69 | 59628 | 9.57 | 30467 | 12.84 | 39640 | 15.40 | 10316 | 6.24 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1414-BS | 85277 | 9.19 | 125870 | 10.07 | 64301 | 13.34 | 82889 | 15.90 | 22007 | 6.75 |
| MSM1414-MB | 82890 | 9.19 | 121056 | 10.06 | 58982 | 13.34 | 74760 | 15.90 | 22387 | 6.74 |
| ZZZZZZ | 78486 | 9.19 | 113135 | 10.06 | 56908 | 13.34 | 70928 | 15.90 | 21456 | 6.73 |
| ZZZZZZ | 78941 | 9.19 | 115264 | 10.07 | 56066 | 13.34 | 70841 | 15.90 | 21759 | 6.74 |
| MC3836-8 | 77551 | 9.19 | 112945 | 10.07 | 55555 | 13.34 | 70531 | 15.90 | 21411 | 6.75 |
| ZZZZZZ | 77216 | 9.19 | 111697 | 10.07 | 54744 | 13.34 | 69499 | 15.90 | 20668 | 6.74 |
| ZZZZZZ | 74473 | 9.19 | 110011 | 10.07 | 53420 | 13.34 | 67532 | 15.90 | 20826 | 6.75 |
| ZZZZZZ | 75926 | 9.19 | 111363 | 10.07 | 54094 | 13.34 | 68305 | 15.90 | 20881 | 6.74 |
| ZZZZZZ | 75361 | 9.19 | 111804 | 10.07 | 54925 | 13.34 | 68901 | 15.90 | 21791 | 6.75 |
| ZZZZZZ | 79186 | 9.19 | 117295 | 10.07 | 57900 | 13.34 | 72369 | 15.90 | 22020 | 6.74 |
| MC3889-1 | 78223 | 9.19 | 116495 | 10.07 | 56667 | 13.34 | 69012 | 15.90 | 21467 | 6.75 |
| MC3889-1MS | 82761 | 9.19 | 128391 | 10.07 | 65949 | 13.34 | 82838 | 15.90 | 23148 | 6.74 |
| MC3889-1MSD | 88673 | 9.19 | 134015 | 10.06 | 68826 | 13.33 | 86039 | 15.90 | 26009 | 6.74 |
| ZZZZZZ | 87242 | 9.19 | 134038 | 10.07 | 64655 | 13.34 | 79759 | 15.90 | 26497 | 6.73 |
| ZZZZZZ | 85196 | 9.19 | 127082 | 10.07 | 61122 | 13.34 | 75046 | 15.90 | 21906 | 6.74 |
| ZZZZZZ | 81731 | 9.19 | 122382 | 10.07 | 59012 | 13.34 | 72988 | 15.90 | 21548 | 6.73 |
| ZZZZZZ | 81301 | 9.19 | 122679 | 10.07 | 59756 | 13.34 | 72229 | 15.90 | 21082 | 6.74 |
| ZZZZZZ | 80148 | 9.19 | 117414 | 10.07 | 58522 | 13.34 | 70338 | 15.90 | 21053 | 6.74 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV94-CC67 | Injection Date: | 09/28/11 |
| Lab File ID: | V2139.D | Injection Time: | 09:17 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 405853 | 6.53 | 602381 | 7.72 | 317274 | 11.07 | 318566 | 13.31 | 108299 | 3.50 |
| Upper Limit [a] | 811706 | 7.03 | 1204762 | 8.22 | 634548 | 11.57 | 637132 | 13.81 | 216598 | 4.00 |
| Lower Limit [b] | 202927 | 6.03 | 301191 | 7.22 | 158637 | 10.57 | 159283 | 12.81 | 54150 | 3.00 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSV94-BS | 399921 | 6.53 | 595071 | 7.72 | 311360 | 11.07 | 317284 | 13.31 | 120898 | 3.50 |
| MSV94-MB | 373951 | 6.53 | 578804 | 7.72 | 301498 | 11.07 | 307457 | 13.31 | 121681 | 3.50 |
| ZZZZZZ | 372902 | 6.53 | 579169 | 7.72 | 309092 | 11.07 | 315973 | 13.31 | 174701 | 3.49 |
| ZZZZZZ | 373094 | 6.52 | 580855 | 7.72 | 301359 | 11.07 | 285279 | 13.31 | 158341 | 3.49 |
| MC3836-3 | 349243 | 6.53 | 551121 | 7.72 | 292521 | 11.07 | 290701 | 13.31 | 139296 | 3.50 |
| MC3836-3MS | 386634 | 6.53 | 595534 | 7.72 | 317676 | 11.07 | 323888 | 13.31 | 196864 | 3.50 |
| MC3836-3MSD | 394021 | 6.53 | 599661 | 7.72 | 322221 | 11.08 | 317509 | 13.31 | 192236 | 3.51 |
| ZZZZZZ | 385883 | 6.53 | 595118 | 7.72 | 317398 | 11.07 | 315743 | 13.31 | 170546 | 3.50 |
| ZZZZZZ | 371152 | 6.54 | 573842 | 7.72 | 302417 | 11.08 | 316339 | 13.31 | 139346 | 3.50 |
| ZZZZZZ | 357113 | 6.53 | 561731 | 7.72 | 298115 | 11.08 | 297821 | 13.31 | 112981 | 3.49 |
| ZZZZZZ | 351694 | 6.53 | 547267 | 7.72 | 284961 | 11.08 | 269783 | 13.31 | 152244 | 3.50 |
| ZZZZZZ | 386632 | 6.54 | 606354 | 7.73 | 319544 | 11.08 | 312883 | 13.31 | 146699 | 3.51 |
| ZZZZZZ | 355204 | 6.53 | 557639 | 7.72 | 284440 | 11.08 | 250824 | 13.31 | 102700 | 3.50 |
| ZZZZZZ | 352273 | 6.53 | 548765 | 7.72 | 282959 | 11.08 | 257562 | 13.31 | 79759 | 3.50 |
| ZZZZZZ | 360422 | 6.53 | 556274 | 7.72 | 291565 | 11.08 | 288040 | 13.31 | 96830 | 3.49 |
| ZZZZZZ | 353817 | 6.54 | 554157 | 7.72 | 287196 | 11.08 | 262869 | 13.31 | 83844 | 3.50 |
| ZZZZZZ | 315476 | 6.53 | 499400 | 7.72 | 202971 | 11.08 | 97778[c] | 13.31 | 95837 | 3.50 |
| ZZZZZZ | 349592 | 6.53 | 552756 | 7.72 | 288604 | 11.08 | 274798 | 13.31 | 93553 | 3.49 |
| ZZZZZZ | 8308[c] | 6.53 | 11947[c] | 7.72 | 6499[c] | 11.08 | 4204[c] | 13.31 | 2966[c] | 3.45 |
| MC3836-7 | 341206 | 6.53 | 539167 | 7.72 | 296714 | 11.07 | 295474 | 13.31 | 145138 | 3.49 |
| MC3836-4 | 340743 | 6.54 | 540504 | 7.72 | 1376278[c] | 11.06 | 227743 | 13.32 | 181141 | 3.52 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Volatile Surrogate Recovery Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3836-8 | M43750.D | 94.0 | 98.0 | 91.0 |
| MC3889-1MS | M43757.D | 95.0 | 97.0 | 94.0 |
| MC3889-1MSD | M43758.D | 92.0 | 97.0 | 94.0 |
| MSM1414-BS | M43744.D | 90.0 | 100.0 | 96.0 |
| MSM1414-MB | M43747.D | 91.0 | 97.0 | 93.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3836-1 | K55089.D | 112.0 | 107.0 | 113.0 |
| MC3836-2 | K55103.D | 105.0 | 105.0 | 109.0 |
| MC3836-3 | V2146.D | 98.0 | 97.0 | 98.0 |
| MC3836-4 | K55152.D | 108.0 | 106.0 | 112.0 |
| MC3836-4 | V2162.D | 99.0 | 251.0* [a] | 321.0* [a] |
| MC3836-5 | K55088.D | 111.0 | 105.0 | 109.0 |
| MC3836-6 | K55087.D | 98.0 | 106.0 | 115.0 |
| MC3836-7 | V2161.D | 100.0 | 99.0 | 99.0 |
| MC3828-3MS | K55082.D | 103.0 | 111.0 | 107.0 |
| MC3828-3MSD | K55083.D | 97.0 | 107.0 | 103.0 |
| MC3836-3MS | V2147.D | 97.0 | 95.0 | 94.0 |
| MC3836-3MSD | V2148.D | 99.0 | 97.0 | 98.0 |
| MC3895-4MS | K55107.D | 95.0 | 98.0 | 97.0 |
| MC3895-4MSD | K55108.D | 101.0 | 107.0 | 103.0 |
| MC3895-7MS | K55166.D | 99.0 | 102.0 | 100.0 |
| MC3895-7MSD | K55167.D | 106.0 | 111.0 | 108.0 |
| MSK1840-BS | K55067.D | 101.0 | 108.0 | 104.0 |
| MSK1840-BSD | K55068.D | 99.0 | 103.0 | 101.0 |
| MSK1840-MB | K55069.D | 109.0 | 106.0 | 112.0 |
| MSK1841-BS | K55095.D | 102.0 | 111.0 | 106.0 |
| MSK1841-BSD | K55096.D | 101.0 | 106.0 | 104.0 |
| MSK1841-MB | K55098.D | 104.0 | 102.0 | 110.0 |
| MSK1843-BS | K55147.D | 99.0 | 105.0 | 101.0 |
| MSK1843-BSD | K55148.D | 102.0 | 107.0 | 103.0 |
| MSK1843-MB | K55150.D | 106.0 | 107.0 | 109.0 |
| MSV94-BS | V2142.D | 96.0 | 96.0 | 95.0 |
| MSV94-MB | V2143.D | 96.0 | 95.0 | 95.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

(a) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

New England ACCUTEST LABORATORIES

GC Volatiles

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## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1325-MB | BH24126.D | 1 | 09/26/11 | WS | n/a | n/a | GBH1325 |



The QC reported here applies to the following samples: Method: SW846 8015

MC3836-1, MC3836-2, MC3836-3, MC3836-4, MC3836-5, MC3836-6, MC3836-7

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 0.95 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 85% | 36-148% |

# Blank Spike Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1325-BSP | BH24127.D | 1 | 09/26/11 | WS | n/a | n/a | GBH1325 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3836-1, MC3836-2, MC3836-3, MC3836-4, MC3836-5, MC3836-6, MC3836-7

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 20.4 | 102 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 96% | 36-148% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3836-3MS | BH24138.D | 1 | 09/26/11 | WS | n/a | n/a | GBH1325 |
| MC3836-3MSD | BH24139.D | 1 | 09/26/11 | WS | n/a | n/a | GBH1325 |
| MC3836-3 | BH24137.D | 1 | 09/26/11 | WS | n/a | n/a | GBH1325 |



The QC reported here applies to the following samples: Method: SW846 8015

MC3836-1, MC3836-2, MC3836-3, MC3836-4, MC3836-5, MC3836-6, MC3836-7

| CAS No. | Compound | MC3836-3 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 48.6 | 44.4 | 91 | 42.7 | 88 | 4 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3836-3 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 107% | 93% | 95% | 36-148% |

# Volatile Surrogate Recovery Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Method: SW846 8015 | Matrix: SO |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3836-1 | BH24145.D | 97.0 |
| MC3836-2 | BH24144.D | 112.0 |
| MC3836-3 | BH24137.D | 95.0 |
| MC3836-4 | BH24140.D | 105.0 |
| MC3836-5 | BH24141.D | 99.0 |
| MC3836-6 | BH24142.D | 105.0 |
| MC3836-7 | BH24143.D | 102.0 |
| GBH1325-BSP | BH24127.D | 96.0 |
| GBH1325-MB | BH24126.D | 85.0 |
| MC3836-3MS | BH24138.D | 107.0 |
| MC3836-3MSD | BH24139.D | 93.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1325-CC1043 | Injection Date: | 09/26/11 |
| Lab File ID: | BH24125.D | Injection Time: | 13:57 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1325-MB | BH24126.D | 09/26/11 | 14:37 | 32.40 |
| GBH1325-BSP | BH24127.D | 09/26/11 | 15:17 | 32.40 |
| ZZZZZZ | BH24128.D | 09/26/11 | 15:57 | 32.39 |
| ZZZZZZ | BH24129.D | 09/26/11 | 16:37 | 32.40 |
| ZZZZZZ | BH24130.D | 09/26/11 | 17:17 | 32.40 |
| ZZZZZZ | BH24131.D | 09/26/11 | 17:57 | 32.39 |
| ZZZZZZ | BH24132.D | 09/26/11 | 18:37 | 32.39 |
| ZZZZZZ | BH24133.D | 09/26/11 | 19:17 | 32.40 |
| ZZZZZZ | BH24134.D | 09/26/11 | 19:58 | 32.40 |
| ZZZZZZ | BH24135.D | 09/26/11 | 20:38 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

6.5.1

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# GC Surrogate Retention Time Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1325-CC1043 | Injection Date: | 09/26/11 |
| Lab File ID: | BH24136.D | Injection Time: | 21:18 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3836-3 | BH24137.D | 09/26/11 | 21:58 | 32.39 |
| MC3836-3MS | BH24138.D | 09/26/11 | 22:38 | 32.39 |
| MC3836-3MSD | BH24139.D | 09/26/11 | 23:18 | 32.39 |
| MC3836-4 | BH24140.D | 09/26/11 | 23:58 | 32.39 |
| MC3836-5 | BH24141.D | 09/27/11 | 00:38 | 32.40 |
| MC3836-6 | BH24142.D | 09/27/11 | 01:18 | 32.39 |
| MC3836-7 | BH24143.D | 09/27/11 | 01:57 | 32.39 |
| MC3836-2 | BH24144.D | 09/27/11 | 02:37 | 32.39 |
| MC3836-1 | BH24145.D | 09/27/11 | 03:17 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

New England ACCUTEST LABORATORIES

## GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26384-MB | BG31420.D | 1 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3836-1, MC3836-2, MC3836-3, MC3836-4, MC3836-5, MC3836-6, MC3836-7

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 16 | 12 | mg/kg | |
| | TPH (>C28-C40) | ND | 16 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 78% | 24-147% |

# Blank Spike Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26384-BS | BG31421.D | 1 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3836-1, MC3836-2, MC3836-3, MC3836-4, MC3836-5, MC3836-6, MC3836-7

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 161 | 153 | 95 | 63-139 |
| | TPH (> C28-C40) | 161 | 105 | 65 | 46-103 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 90% | 24-147% |

7.2.1

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# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26384-MS | BG31422.D | 1 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |
| OP26384-MSD | BG31423.D | 1 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |
| MC3836-3 | BG31424.D | 1 | 10/05/11 | KD | 09/26/11 | OP26384 | GBG1125 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3836-1, MC3836-2, MC3836-3, MC3836-4, MC3836-5, MC3836-6, MC3836-7

7.3.1

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| CAS No. | Compound | MC3836-3 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 184 | 134 | 73 | 179 | 98 | 29 | 8-154/127 |
| | TPH (> C28-C40) | ND | | 184 | 81.3 | 44 | 125 | 69 | 42* [a] | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3836-3 | Limits |
|---|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 68% | 96% | 88% | 24-147% |

(a) Outside control limits due to possible matrix interference.

# Semivolatile Surrogate Recovery Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3836-1 | BG31435.D | 102.0 |
| MC3836-2 | BG31430.D | 102.0 |
| MC3836-3 | BG31424.D | 88.0 |
| MC3836-4 | BG31434.D | 94.0 |
| MC3836-5 | BG31431.D | 96.0 |
| MC3836-6 | BG31432.D | 100.0 |
| MC3836-7 | BG31429.D | 80.0 |
| OP26384-BS | BG31421.D | 90.0 |
| OP26384-MB | BG31420.D | 78.0 |
| OP26384-MS | BG31422.D | 68.0 |
| OP26384-MSD | BG31423.D | 96.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 1-Chlorooctadecane | 24-147% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1125-ICC1125 | Injection Date: | 10/04/11 |
| Lab File ID: | BG31414.D | Injection Time: | 22:06 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 16.31 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31417.D | 10/05/11 | 00:24 | 16.31 |
| ZZZZZZ | BG31418.D | 10/05/11 | 01:11 | 16.30 |
| ZZZZZZ | BG31419.D | 10/05/11 | 01:57 | 16.30 |
| OP26384-MB | BG31420.D | 10/05/11 | 02:43 | 16.31 |
| OP26384-BS | BG31421.D | 10/05/11 | 03:30 | 16.31 |
| OP26384-MS | BG31422.D | 10/05/11 | 04:16 | 16.31 |
| OP26384-MSD | BG31423.D | 10/05/11 | 05:02 | 16.31 |
| MC3836-3 | BG31424.D | 10/05/11 | 05:49 | 16.31 |
| ZZZZZZ | BG31425.D | 10/05/11 | 06:35 | 16.31 |
| ZZZZZZ | BG31426.D | 10/05/11 | 07:22 | 16.31 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.1

7

# GC Surrogate Retention Time Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1125-CC1125 | Injection Date: | 10/05/11 |
| Lab File ID: | BG31427.D | Injection Time: | 08:08 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 16.31 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31428.D | 10/05/11 | 08:54 | 16.31 |
| MC3836-7 | BG31429.D | 10/05/11 | 09:40 | 16.31 |
| MC3836-2 | BG31430.D | 10/05/11 | 10:26 | 16.33 |
| MC3836-5 | BG31431.D | 10/05/11 | 11:12 | 16.31 |
| MC3836-6 | BG31432.D | 10/05/11 | 11:58 | 16.33 |
| MC3836-4 | BG31434.D | 10/05/11 | 13:30 | 16.31 |
| MC3836-1 | BG31435.D | 10/05/11 | 14:17 | 16.29 |
| ZZZZZZ | BG31436.D | 10/05/11 | 15:02 | 16.29 |
| GBG1125-ECC112 | BG31437.D | 10/05/11 | 15:48 | 16.31 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.2

7

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## General Chemistry

# QC Data Summaries

8

Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC3836-1 Analyzed: 23-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE30 (3-4)092111

| | | |
|---|---|---|
| Wet Weight (Total) | 32.887 | g |
| Tare Weight | 23.025 | g |
| Dry Weight (Total) | 30.957 | g |
| Solids, Percent | 80.4 | % |

Sample: MC3836-2 Analyzed: 23-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE29 (25-27.5)092111

| | | |
|---|---|---|
| Wet Weight (Total) | 28.669 | g |
| Tare Weight | 18.82 | g |
| Dry Weight (Total) | 27.879 | g |
| Solids, Percent | 92 | % |

Sample: MC3836-3 Analyzed: 23-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE28 (10-12.5)092111

| | | |
|---|---|---|
| Wet Weight (Total) | 29.993 | g |
| Tare Weight | 17.351 | g |
| Dry Weight (Total) | 28.797 | g |
| Solids, Percent | 90.5 | % |

Sample: MC3836-4 Analyzed: 23-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE8 (15-17.5)092111

| | | |
|---|---|---|
| Wet Weight (Total) | 31.252 | g |
| Tare Weight | 18.348 | g |
| Dry Weight (Total) | 30.664 | g |
| Solids, Percent | 95.4 | % |

Sample: MC3836-5 Analyzed: 23-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP37 (6-7)092111

| | | |
|---|---|---|
| Wet Weight (Total) | 30.362 | g |
| Tare Weight | 20.503 | g |
| Dry Weight (Total) | 29.51 | g |
| Solids, Percent | 91.4 | % |

Sample: MC3836-6 Analyzed: 23-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE29 (25-27.5)092111 DUP

| | | |
|---|---|---|
| Wet Weight (Total) | 29.339 | g |
| Tare Weight | 19.753 | g |
| Dry Weight (Total) | 28.46 | g |
| Solids, Percent | 90.8 | % |

# Percent Solids Raw Data Summary



Job Number: MC3836
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC3836-7 Analyzed: 23-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE7 (12.5-15)092111

| | | |
|---|---|---|
| Wet Weight (Total) | 32.148 | g |
| Tare Weight | 18.997 | g |
| Dry Weight (Total) | 31.032 | g |
| Solids, Percent | 91.5 | % |

# SVE Install 2011 Data Review

**Laboratory SDG: MC3883**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 1/11/2012**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| SVE-20 (25-27.5) 092211 | SVE-13 (17.5-20)92211 |
| SVE-10 (17.5-20) 092211 | VMP-36 (10-11) 092211 |
| SVE-33 (27.5-30) 092211 | SVE-11 (12.5-15) 092211 |
| SVE-32 (25-27.5) 092211 | SVE-10 (17.5-20) 092211 Dup |
| SVE-12 (15-17.5) 092211 | |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

No, trip blank TB-092211 listed on the COC was not received by the laboratory, and was therefore not analyzed for VOCs and TPH-GRO/DRO/ORO.

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS recoveries were outside evaluation criteria. VOCs and TPH-GRO were qualified due to field duplicate RPD outside evaluation criteria in the field duplicate pair, SVE-7 (12.5-15) 092111/SVE-7 (12.5-15) 092111 Dup. Professional judgment was used to qualify acetone in samples SVE-20 (25-27.5) 092211 and SVE-33 (27.5-30) 092211. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 0.8°C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; therefore, no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSV96-BS | VOCs | Acetone | **140** | NA | 70-130 |
| MSV96-BS | VOCs | Acrolein | **496** | NA | 70-130 |
| MSV96-BS | VOCs | Acrylonitrile | **656** | NA | 70-130 |

Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. No qualification of data was required.

**6.0 Surrogate Recoveries**

*Were surrogate recoveries within evaluation criteria?*

Yes

**7.0 Matrix Spike and Matrix Spike Duplicate Recoveries**

*Were MS/MSD samples analyzed as part of this SDG?*

No

**8.0 Internal Standard (IS) Recoveries**

*Were internal standard area recoveries within evaluation criteria?*

Yes

**9.0 Laboratory Duplicate Results**

*Were laboratory duplicate samples collected as part of this SDG?*

No

**10.0 Field Duplicate Results**

*Were field duplicate samples collected as part of this SDG?*

Yes

| Field ID | Field Duplicate ID |
|---|---|
| SVE-10 (17.5-20) 092211 | SVE-10 (17.5-20) 092211 Dup |

*Were field duplicates within evaluation criteria?*

No

| Field ID | Field Duplicate ID | Parameter | Analyte | RPD | Qualification |
|---|---|---|---|---|---|
| SVE-10 (17.5-20) 092211 | SVE-10 (17.5-20) 092211 Dup | VOCs | Ethylbenzene | **143** | **J/J** |
| SVE-10 (17.5-20) 092211 | SVE-10 (17.5-20) 092211 Dup | VOCs | 1,2,4-Trimethylbenzene | **107** | **J/J** |
| SVE-10 (17.5-20) 092211 | SVE-10 (17.5-20) 092211 Dup | VOCs | m,p-Xylene | **142** | **J/J** |
| SVE-10 (17.5-20) 092211 | SVE-10 (17.5-20) 092211 Dup | VOCs | Xylene (total) | **143** | **J/J** |
| SVE-10 (17.5-20) 092211 | SVE-10 (17.5-20) 092211 Dup | TPH-GRO | TPH-GRO | **87** | **J/J** |

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

Yes, professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations less than two times (2X) the reporting limit (RL), since acetone is not representative of site conditions. Additionally, USEPA Method 5035A states that acidification of certain soils with sodium bisulfate may produce a false positive acetone artifact of 100-200 ppb, or more. Acetone reported at concentrations less than 200 ppb (ug/kg) were qualified.

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| SVE-20 (25-27.5) 092211 | Acetone | - | **U** | Professional Judgment |

Additionally, professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations more than two times (2X) the reporting limit (RL), since acetone is not representative of site conditions.

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| SVE-33 (27.5-30) 092211 | Acetone | 25.6 ug/kg | **U** | Professional Judgment |

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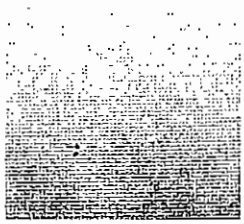
11/23/11





## Technical Report for

Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC3883

Sampling Date: 09/22/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **109**

Reviewed on 1/11/2012

Reza Tand
Lab Director

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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# Sample Summary

Shell Oil

Job No: MC3883

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|
| MC3883-1 | 09/22/11 | 15:50 LR | 09/23/11 | SO | Soil | SVE20 (25-27.5)092211 |
| MC3883-2 | 09/22/11 | 14:55 LR | 09/23/11 | SO | Soil | SVE13 (17.5-20)092211 |
| MC3883-3 | 09/22/11 | 09:20 LR | 09/23/11 | SO | Soil | SVE10 (17.5-20)092211 |
| MC3883-4 | 09/22/11 | 14:40 LR | 09/23/11 | SO | Soil | VMP36 (10-11)092211 |
| MC3883-5 | 09/22/11 | 13:20 LR | 09/23/11 | SO | Soil | SVE33 (27.5-30)092211 |
| MC3883-6 | 09/22/11 | 10:45 LR | 09/23/11 | SO | Soil | SVE11 (12.5-15)092211 |
| MC3883-7 | 09/22/11 | 10:05 LR | 09/23/11 | SO | Soil | SVE32 (25-27.5)092211 |
| MC3883-8 | 09/22/11 | 09:20 LR | 09/23/11 | SO | Soil | SVE10 (17.5-20)092211 DUP |
| MC3883-9 | 09/22/11 | 14:00 LR | 09/23/11 | SO | Soil | SVE12 (15-17.5)092211 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

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2

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC3883 |
| **Site:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Ra | **Report Date** | 10/11/2011 11:42:41 AM |

9 Sample(s) were collected on 09/22/2011 and were received at Accutest on 09/23/2011 properly preserved, at 0.8 Deg. C and intact. These Samples received an Aceutest job number of MC3883. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** SO **Batch ID:** MSK1841

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3895-4MS, MC3895-4MSD were used as the QC samples indicated.
- All method blanks for this bateh meet method specific eriteria.
- Matrix Spike Duplicate Recovery(s) for Aerolein are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

**Matrix** SO **Batch ID:** MSV96

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3904-3MS, MC3904-3MSD were used as the QC samples indicated.
- All method blanks for this bateh meet method specific criteria.
- Blank Spike Rccovery(s) for Acetone are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Acetone are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- Matrix Spike Duplicate Recovery(s) for 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Diehlorobenzene, 1,4-Dichlorobenzene, 1,4-Dioxane, Hexaehlorobutadiene, Naphthalene are outside control limits. Outside control limits due to possible matrix interferenee. Refer to Blank Spike.
- RPD(s) for MSD for 1,1,1,2-Tetrachloroethane, 1,1,2,2-Tetrachloroethane, 1,2,3-Triehlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dibromo-3-chloropropane, 1,2-Dichlorobenzene, 1,3,5-Trimethylbenzene, 1,3-Diehlorobenzene, 1,3-Dichloropropane, 1,4-Diehlorobenzene, 1,4-Dioxane, Bromobenzene, Chlorobcnzene, Dibromochloromethane, Ethylbenzene, Hexachlorobutadiene, Isopropylbenzene, m,p-Xylene, n-Butylbenzene, n-Propylbenzene, Naphthalene, o-Chlorotoluene, o-Xylcne, p-Chlorotoluene, p-Isopropyltoluenc, sec-Butylbenzcne, Styrene, tert-Butylbenzene, Tetrachloroethene, Trichlorofluoromethane, Xylene (total) are outside control limits for sample MC3904-3MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- Matrix Spike Recovery(s) for 1.1,2,2-Tetrachloroethane, 1,2,3-Triehlorobenzene, 1,2,3-Trichloropropanc, 1,2,4-Trimethylbenzene, 1,2-Dibromo-3-ehloropropane, 1,2-Diehlorobenzene, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,3-Dichloropropane, 1,4-Dichlorobenzene, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 2-Hexanone, 4-Methyl-2-pentanonc (MIBK), Bromobenzene, Ethylbenzene, Hexaehlorobutadicne, Isopropylbenzene, m,p-Xylene, n-Butylbenzene, n-Propylbenzene, Naphthalene, o-Chlorotoluene, p-Chlorotoluene, p-Isopropyltoluene, sec-Butylbenzenc, tert-Butylbenzene, Trichlorofluoromethane, Xylene (total), Aerolein, Acrylonitrile are outsidc control limits. Outside control limits due to possiblc matrix interference. Refer to Blank Spike.
- BS/MS/MSD for Acrolein, Acrylonitrile: Outside control limits. Assoeiated samples are non-deteet for this eompound.

## Volatiles by GC By Method SW846 8015

| Matrix SO | Batch ID: GBH1325 |
|---|---|

- All samples were analyzed within the reeommended method holding time.
- Sample(s) MC3836-3MS, MC3836-3MSD were used as the QC samples indieated.
- All method blanks for this batch meet method speeific criteria.

| Matrix SO | Batch ID: GBH1337 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method speeific criteria.
- Sample(s) MC4079-11MS, MC4079-11MSD were used as the QC samples indicated.
- Calibration standard GBH1337-CC1043 utilized the same files as GBH1336-CC1043.

## Extractables by GC By Method SW846-8015

| Matrix SO | Batch ID: OP26402 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3921-2MS, MC3921-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- RPD(s) for MSD for TPH (>C28-C40) are outside control limits for sample OP26402-MSD. Outside control limits due to possible matrix interference.
- OP26402-MSD for 1-Chlorooctadecane: Surrogate standard not added.Range recovery satisfactory.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN36276 |
|---|---|

- Sample(s) MC3847-16DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC3883).

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## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE20 (25-27.5)092211 | | |
| Lab Sample ID: | MC3883-1 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 95.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2197.D | 1 | 09/30/11 | AMY | n/a | n/a | MSV96 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.77 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~4.6~~ U | 5.5 | 1.3 | ug/kg | J |
| 107-02-8 | Acrolein | ND | 28 | 19 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.5 | 2.2 | ug/kg | |
| 71-43-2 | Benzene | 70.1 | 0.55 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.5 | 0.21 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.5 | 1.1 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.2 | 0.23 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.2 | 0.52 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.2 | 0.74 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.5 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.5 | 1.4 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 1.6 | 5.5 | 0.18 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | 0.88 | 5.5 | 0.72 | ug/kg | J |
| 75-15-0 | Carbon disulfide | ND | 5.5 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.2 | 0.25 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.2 | 0.10 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.5 | 0.29 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.5 | 5.5 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.2 | 0.16 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.5 | 0.24 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.5 | 0.15 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.5 | 1.2 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.5 | 5.5 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.2 | 0.72 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.2 | 0.21 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.2 | 0.17 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.2 | 0.15 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.2 | 0.38 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.2 | 0.17 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.2 | 0.16 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.2 | 0.35 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE20 (25-27.5)092211 | | |
| Lab Sample ID: | MC3883-1 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 95.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.2 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.2 | 0.28 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.2 | 0.25 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.5 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.5 | 0.20 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.5 | 0.21 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.2 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.2 | 0.75 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 28 | 28 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.5 | 3.4 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.2 | 0.14 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.5 | 5.5 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.5 | 1.2 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 0.97 | 5.5 | 0.18 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | ND | 5.5 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.2 | 0.68 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.5 | 0.93 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.5 | 0.34 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.2 | 0.40 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.5 | 5.5 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 1.5 | 5.5 | 0.18 | ug/kg | J |
| 100-42-5 | Styrene | ND | 5.5 | 0.55 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.5 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.2 | 0.19 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.2 | 0.19 | ug/kg | |
| 108-88-3 | Toluene | 2.6 | 5.5 | 0.20 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.5 | 1.2 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.5 | 5.5 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.2 | 0.28 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.2 | 0.22 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.2 | 1.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.5 | 0.23 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 0.81 | 5.5 | 0.17 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.5 | 0.20 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.5 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.2 | 0.71 | ug/kg | |
| | m,p-Xylene | ND | 2.2 | 0.28 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.2 | 0.20 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.2 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE20 (25-27.5)092211 | | |
| Lab Sample ID: | MC3883-1 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 95.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 100% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.1

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE20 (25-27.5)092211 | | |
| Lab Sample ID: | MC3883-1 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8015 | Percent Solids: | 95.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24150.D | 1 | 09/27/11 | WS | n/a | n/a | GBH1325 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.14 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 23.9 | 13 | 2.5 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 102% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE20 (25-27.5)092211 | | |
| Lab Sample ID: | MC3883-1 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 95.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31503.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1129 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.2 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 20.6 | 17 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 95% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE13 (17.5-20)092211 | | |
| Lab Sample ID: | MC3883-2 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 95.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55105.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.71 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 720 | 170 | ug/kg | |
| 107-02-8 | Acrolein | ND | 3600 | 2400 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 720 | 290 | ug/kg | |
| 71-43-2 | Benzene | 59.8 | 72 | 18 | ug/kg | J |
| 108-86-1 | Bromobenzene | ND | 720 | 28 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 720 | 150 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 290 | 30 | ug/kg | |
| 75-25-2 | Bromoform | ND | 290 | 68 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 290 | 97 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 720 | 170 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 720 | 180 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 411 | 720 | 24 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 720 | 94 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 720 | 140 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 290 | 32 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 290 | 14 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 720 | 37 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 720 | 720 | ug/kg | |
| 67-66-3 | Chloroform | ND | 290 | 21 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 720 | 31 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 720 | 20 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 720 | 160 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 720 | 720 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 290 | 94 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 290 | 28 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 290 | 22 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 290 | 21 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 290 | 20 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 290 | 49 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 290 | 22 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 290 | 21 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 290 | 46 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE13 (17.5-20)092211 | | |
| Lab Sample ID: | MC3883-2 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 95.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 290 | 39 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 290 | 36 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 290 | 33 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 720 | 170 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 720 | 27 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 720 | 28 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 290 | 140 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 290 | 99 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 3600 | 3600 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 720 | 450 | ug/kg | |
| 100-41-4 | Ethylbenzene | 1350 | 290 | 19 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 720 | 720 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 720 | 150 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 1060 | 720 | 23 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | 261 | 720 | 23 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 290 | 89 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 720 | 120 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 720 | 44 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 290 | 52 | ug/kg | |
| 91-20-3 | Naphthalene | 4210 | 720 | 720 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 3110 | 720 | 23 | ug/kg | |
| 100-42-5 | Styrene | ND | 720 | 72 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 720 | 150 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 290 | 25 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 290 | 24 | ug/kg | |
| 108-88-3 | Toluene | ND | 720 | 26 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 720 | 160 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 720 | 720 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 290 | 26 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 290 | 37 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 290 | 28 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 290 | 130 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 720 | 30 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 10900 | 720 | 23 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 876 | 720 | 26 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 720 | 170 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 290 | 93 | ug/kg | |
| | m,p-Xylene | 1850 | 290 | 36 | ug/kg | |
| 95-47-6 | o-Xylene | 67.2 | 290 | 27 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 1920 | 290 | 18 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE13 (17.5-20)092211 | | |
| Lab Sample ID: | MC3883-2 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 95.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 108% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 103% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 112% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE13 (17.5-20)092211 | | |
| Lab Sample ID: | MC3883-2 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8015 | Percent Solids: | 95.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24149.D | 1 | 09/27/11 | WS | n/a | n/a | GBH1325 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.57 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | I26 | 12 | 2.2 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | I02% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.2

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE13 (17.5-20)092211 | | |
| Lab Sample ID: | MC3883-2 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 95.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31501.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1129 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.4 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 156 | 17 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 105% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE10 (17.5-20)092211 | | |
| Lab Sample ID: | MC3883-3 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 96.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55111.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.86 g | 10.0 ml | 20.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 3400 | 790 | ug/kg | |
| 107-02-8 | Acrolein | ND | 17000 | 12000 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 3400 | 1400 | ug/kg | |
| 71-43-2 | Benzene | ND | 340 | 86 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 3400 | 130 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 3400 | 710 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 1400 | 140 | ug/kg | |
| 75-25-2 | Bromoform | ND | 1400 | 320 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 1400 | 460 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 3400 | 810 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 3400 | 860 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 3400 | 110 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 3400 | 450 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 3400 | 660 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 1400 | 150 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 1400 | 64 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 3400 | 180 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 3400 | 3400 | ug/kg | |
| 67-66-3 | Chloroform | ND | 1400 | 100 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 3400 | 150 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 3400 | 96 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 3400 | 770 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 3400 | 3400 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 1400 | 450 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 1400 | 130 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1400 | 100 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1400 | 99 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1400 | 96 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 1400 | 230 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1400 | 100 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1400 | 99 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1400 | 220 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE10 (17.5-20)092211 | | |
| Lab Sample ID: | MC3883-3 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 96.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1400 | 190 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1400 | 170 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 1400 | 160 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 3400 | 790 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 3400 | 130 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 3400 | 130 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1400 | 680 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1400 | 470 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 17000 | 17000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 3400 | 2100 | ug/kg | |
| 100-41-4 | Ethylbenzene | 12400 J | 1400 | 89 | ug/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 3400 | 3400 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 3400 | 720 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 3280 | 3400 | 110 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | ND | 3400 | 110 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1400 | 420 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 3400 | 580 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 3400 | 210 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 1400 | 250 | ug/kg | |
| 91-20-3 | Naphthalene | 10800 | 3400 | 3400 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 10100 | 3400 | 110 | ug/kg | |
| 100-42-5 | Styrene | ND | 3400 | 340 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 3400 | 690 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1400 | 120 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 1400 | 120 | ug/kg | |
| 108-88-3 | Toluene | ND | 3400 | 120 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 3400 | 750 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 3400 | 3400 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1400 | 130 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1400 | 170 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 1400 | 130 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 1400 | 630 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 3400 | 140 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 64700 J | 3400 | 110 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 14300 | 3400 | 120 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 3400 | 800 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 1400 | 440 | ug/kg | |
| | m,p-Xylene | 29700 J | 1400 | 170 | ug/kg | J |
| 95-47-6 | o-Xylene | 1980 | 1400 | 130 | ug/kg | |
| 1330-20-7 | Xylene (total) | 31700 J | 1400 | 86 | ug/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE10 (17.5-20)092211 | | |
| Lab Sample ID: | MC3883-3 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 96.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 109% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 107% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 113% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE10 (17.5-20)092211 | | |
| Lab Sample ID: | MC3883-3 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8015 | Percent Solids: | 96.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24148.D | 1 | 09/27/11 | WS | n/a | n/a | GBH1325 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.33 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 545 J | 12 | 2.3 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 98% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE10 (17.5-20)092211 | | |
| Lab Sample ID: | MC3883-3 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 96.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31494.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1128 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.5 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 222 | 17 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 78% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (10-11)092211 | | |
| Lab Sample ID: | MC3883-4 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 83.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55110.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.10 g | 10.0 ml | 50.0 ul |
| Run #2 | | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 1600 | 360 | ug/kg | |
| 107-02-8 | Acrolein | ND | 7900 | 5300 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 1600 | 630 | ug/kg | |
| 71-43-2 | Benzene | 183 | 160 | 39 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 1600 | 60 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 1600 | 330 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 630 | 66 | ug/kg | |
| 75-25-2 | Bromoform | ND | 630 | 150 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 630 | 210 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 1600 | 370 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 3620 | 1600 | 400 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 2050 | 1600 | 52 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 1600 | 210 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 1600 | 300 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 630 | 70 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 630 | 29 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 1600 | 82 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 1600 | 1600 | ug/kg | |
| 67-66-3 | Chloroform | ND | 630 | 47 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 1600 | 68 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 1600 | 44 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 1600 | 350 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1600 | 1600 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 630 | 200 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 630 | 60 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 630 | 47 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 630 | 45 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 630 | 44 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 630 | 110 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 630 | 48 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 630 | 46 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 630 | 100 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.4

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (10-11)092211 | | |
| Lab Sample ID: | MC3883-4 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 83.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 630 | 85 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 630 | 79 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 630 | 72 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 1600 | 360 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 1600 | 58 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 1600 | 61 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 630 | 310 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 630 | 220 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 7900 | 7900 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 1600 | 980 | ug/kg | |
| 100-41-4 | Ethylbenzene | 161 | 630 | 41 | ug/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 1600 | 1600 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 1600 | 330 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 1810 | 1600 | 50 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | 1050 | 1600 | 51 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 630 | 190 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 1600 | 260 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 1600 | 96 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 630 | 110 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 1600 | 1600 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 2330 | 1600 | 51 | ug/kg | |
| 100-42-5 | Styrene | ND | 1600 | 160 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1600 | 320 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 630 | 55 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 630 | 53 | ug/kg | |
| 108-88-3 | Toluene | ND | 1600 | 56 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1600 | 350 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1600 | 1600 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 630 | 57 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 630 | 80 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 630 | 61 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 630 | 290 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1600 | 66 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 936 | 1600 | 49 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 280 | 1600 | 57 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 1600 | 370 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 630 | 200 | ug/kg | |
| | m,p-Xylene | 938 | 630 | 79 | ug/kg | |
| 95-47-6 | o-Xylene | 308 | 630 | 58 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 1250 | 630 | 40 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (10-11)092211 | | |
| Lab Sample ID: | MC3883-4 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 83.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 112% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 107% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 118% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.4

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (10-11)092211 | | |
| Lab Sample ID: | MC3883-4 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8015 | Percent Solids: | 83.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24147.D | 1 | 09/27/11 | WS | n/a | n/a | GBH1325 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.87 g | 10.0 ml | 10.0 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 636 | 130 | 25 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 115% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (10-11)092211 | | |
| Lab Sample ID: | MC3883-4 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 83.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31509.D | 1 | 10/07/11 | KD | 09/27/11 | OP26402 | GBG1129 |
| Run #2 | BG31519.D | 5 | 10/07/11 | KD | 09/27/11 | OP26402 | GBG1130 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.5 g | 1.0 ml |
| Run #2 | 15.5 g | 1.0 ml |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 3680 [a] | 97 | 74 | mg/kg | |
| | TPH ( > C28-C40) | 170 | 19 | 15 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 104% | 109% | 24-147% |

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.5

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE33 (27.5-30)092211 | | |
| Lab Sample ID: | MC3883-5 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 96.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2198.D | 1 | 09/30/11 | AMY | n/a | n/a | MSV96 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.70 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~25.6~~ u ~~5.5~~ 25.6 | | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 28 | 19 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.5 | 2.2 | ug/kg | |
| 71-43-2 | Benzene | 4.1 | 0.55 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.5 | 0.21 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.5 | 1.1 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.2 | 0.23 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.2 | 0.52 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.2 | 0.75 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.5 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.5 | 1.4 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.5 | 0.18 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.5 | 0.72 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.5 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.2 | 0.25 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.2 | 0.10 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.5 | 0.29 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.5 | 5.5 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.2 | 0.16 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.5 | 0.24 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.5 | 0.15 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.5 | 1.2 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.5 | 5.5 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.2 | 0.72 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.2 | 0.21 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.2 | 0.17 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.2 | 0.15 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethaue | ND | 2.2 | 0.38 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.2 | 0.17 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.2 | 0.16 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.2 | 0.35 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE33 (27.5-30)092211 | | |
| Lab Sample ID: | MC3883-5 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 96.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.2 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.2 | 0.28 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.2 | 0.25 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.5 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.5 | 0.20 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.5 | 0.21 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.2 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.2 | 0.76 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 28 | 28 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.5 | 3.4 | ug/kg | |
| 100-41-4 | Ethylbenzene | 2.2 | 2.2 | 0.14 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.5 | 5.5 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.5 | 1.2 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 0.64 | 5.5 | 0.18 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | ND | 5.5 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.2 | 0.68 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.5 | 0.93 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.5 | 0.34 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.2 | 0.40 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.5 | 5.5 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 1.4 | 5.5 | 0.18 | ug/kg | J |
| 100-42-5 | Styrene | ND | 5.5 | 0.55 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.5 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.2 | 0.19 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.2 | 0.19 | ug/kg | |
| 108-88-3 | Toluene | 8.9 | 5.5 | 0.20 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.5 | 1.2 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.5 | 5.5 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.2 | 0.28 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.2 | 0.22 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.2 | 1.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.5 | 0.23 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 4.9 | 5.5 | 0.17 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.4 | 5.5 | 0.20 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 5.5 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.2 | 0.71 | ug/kg | |
| | m,p-Xylene | 3.3 | 2.2 | 0.28 | ug/kg | |
| 95-47-6 | o-Xylene | 1.7 | 2.2 | 0.20 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 5.0 | 2.2 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.5

| | | | |
|---|---|---|---|
| **Client Sample ID:** | SVE33 (27.5-30)092211 | | |
| **Lab Sample ID:** | MC3883-5 | **Date Sampled:** | 09/22/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/23/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | 96.4 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.5

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE33 (27.5-30)092211 | | |
| Lab Sample ID: | MC3883-5 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8015 | Percent Solids: | 96.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24151.D | 1 | 09/27/11 | WS | n/a | n/a | GBH1325 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.37 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 23.1 | 12 | 2.3 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 105% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE33 (27.5-30)092211 | | |
| Lab Sample ID: | MC3883-5 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 96.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31488.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1128 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.3 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 92% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE11 (12.5-15)092211 | | |
| Lab Sample ID: | MC3883-6 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 92.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55112.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.55 g | 10.0 ml | 10.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 7900 | 1800 | ug/kg | |
| 107-02-8 | Acrolein | ND | 39000 | 27000 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 7900 | 3200 | ug/kg | |
| 71-43-2 | Benzene | 1930 | 790 | 200 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 7900 | 300 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 7900 | 1600 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 3100 | 330 | ug/kg | |
| 75-25-2 | Bromoform | ND | 3100 | 740 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 3100 | 1100 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 7900 | 1900 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 7900 | 2000 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 9910 | 7900 | 260 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | 5630 | 7900 | 1000 | ug/kg | J |
| 75-15-0 | Carbon disulfide | ND | 7900 | 1500 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 3100 | 350 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 3100 | 150 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 7900 | 410 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 7900 | 7900 | ug/kg | |
| 67-66-3 | Chloroform | ND | 3100 | 230 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 7900 | 340 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 7900 | 220 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 7900 | 1800 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 7900 | 7900 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 3100 | 1000 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 3100 | 300 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 3100 | 240 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 3100 | 230 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 3100 | 220 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 3100 | 540 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 3100 | 240 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 3100 | 230 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 3100 | 500 | ug/kg | |

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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE11 (12.5-15)092211 | | |
| Lab Sample ID: | MC3883-6 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 92.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 3100 | 430 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 3100 | 400 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 3100 | 360 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 7900 | 1800 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 7900 | 290 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 7900 | 300 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 3100 | 1600 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 3100 | 1100 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 39000 | 39000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 7900 | 4900 | ug/kg | |
| 100-41-4 | Ethylbenzene | 55100 | 3100 | 200 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 7900 | 7900 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 7900 | 1600 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 19600 | 7900 | 250 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | 4630 | 7900 | 250 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 3100 | 970 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 7900 | 1300 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 7900 | 480 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 3100 | 570 | ug/kg | |
| 91-20-3 | Naphthalene | 47800 | 7900 | 7900 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 69200 | 7900 | 250 | ug/kg | |
| 100-42-5 | Styrene | ND | 7900 | 790 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 7900 | 1600 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 3100 | 280 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 3100 | 260 | ug/kg | |
| 108-88-3 | Toluene | 703 | 7900 | 280 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 7900 | 1700 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 7900 | 7900 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 3100 | 290 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 3100 | 400 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 3100 | 310 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 3100 | 1400 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 7900 | 330 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 215000 | 7900 | 250 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 41200 | 7900 | 290 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 7900 | 1800 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 3100 | 1000 | ug/kg | |
| | m,p-Xylene | 65200 | 3100 | 400 | ug/kg | |
| 95-47-6 | o-Xylene | 4590 | 3100 | 290 | ug/kg | |
| 1330-20-7 | Xylene (total) | 69800 | 3100 | 200 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE11 (12.5-15)092211 | | |
| Lab Sample ID: | MC3883-6 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 92.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 | 170 East Rand Ave. Hartford, IL | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 110% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 105% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 113% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | SVE11 (12.5-15)092211 | | |
| **Lab Sample ID:** | MC3883-6 | **Date Sampled:** | 09/22/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/23/11 |
| **Method:** | SW846 8015 | **Percent Solids:** | 92.2 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24351.D | 1 | 10/05/11 | WS | n/a | n/a | GBH1337 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.55 g | 10.0 ml | 10.0 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 2670 | 160 | 30 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 92% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE11 (12.5-15)092211 | | |
| Lab Sample ID: | MC3883-6 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 92.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31505.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1129 |
| Run #2 | BG31517.D | 5 | 10/07/11 | KD | 09/27/11 | OP26402 | GBG1130 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.1 g | 1.0 ml |
| Run #2 | 15.1 g | 1.0 ml |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 1390 [a] | 90 | 68 | mg/kg | |
| | TPH (>C28-C40) | 53.8 | 18 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 98% | 96% | 24-147% |

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.7

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE32 (25-27.5)092211 | | |
| Lab Sample ID: | MC3883-7 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 94.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55106.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 2.86 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 940 | 220 | ug/kg | |
| 107-02-8 | Acrolein | ND | 4700 | 3200 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 940 | 380 | ug/kg | |
| 71-43-2 | Benzene | 40.5 | 94 | 24 | ug/kg | J |
| 108-86-1 | Bromobenzene | ND | 940 | 36 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 940 | 200 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 380 | 39 | ug/kg | |
| 75-25-2 | Bromoform | ND | 380 | 89 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 380 | 130 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 940 | 220 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 940 | 240 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 940 | 31 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 940 | 120 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 940 | 180 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 380 | 42 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 380 | 18 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 940 | 49 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 940 | 940 | ug/kg | |
| 67-66-3 | Chloroform | ND | 380 | 28 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 940 | 41 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 940 | 26 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 940 | 210 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 940 | 940 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 380 | 120 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 380 | 36 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 380 | 28 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 380 | 27 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 380 | 26 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 380 | 64 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 380 | 29 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 380 | 27 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 380 | 60 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE32 (25-27.5)092211 | | |
| Lab Sample ID: | MC3883-7 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 94.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 380 | 51 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 380 | 47 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 380 | 43 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 940 | 220 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 940 | 35 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 940 | 36 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 380 | 190 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 380 | 130 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 4700 | 4700 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 940 | 590 | ug/kg | |
| 100-41-4 | Ethylbenzene | 349 | 380 | 24 | ug/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 940 | 940 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 940 | 200 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 205 | 940 | 30 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 133 | 940 | 31 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 380 | 120 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 940 | 160 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 940 | 58 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 380 | 68 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 940 | 940 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 457 | 940 | 30 | ug/kg | J |
| 100-42-5 | Styrene | ND | 940 | 94 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 940 | 190 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 380 | 33 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 380 | 32 | ug/kg | |
| 108-88-3 | Toluene | ND | 940 | 34 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 940 | 210 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 940 | 940 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 380 | 34 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 380 | 48 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 380 | 37 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 380 | 170 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 940 | 39 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1590 | 940 | 30 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 940 | 34 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 940 | 220 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 380 | 120 | ug/kg | |
| | m,p-Xylene | 284 | 380 | 47 | ug/kg | J |
| 95-47-6 | o-Xylene | ND | 380 | 35 | ug/kg | |
| 1330-20-7 | Xylene (total) | 284 | 380 | 24 | ug/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | SVE32 (25-27.5)092211 | | |
| **Lab Sample ID:** | MC3883-7 | **Date Sampled:** | 09/22/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/23/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | 94.3 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 | 170 East Rand Ave. Hartford, IL | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 103% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 108% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 114% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE32 (25-27.5)092211 | | |
| Lab Sample ID: | MC3883-7 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8015 | Percent Solids: | 94.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24352.D | 1 | 10/05/11 | WS | n/a | n/a | GBH1337 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 2.86 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 58.1 | 19 | 3.6 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 96% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE32 (25-27.5)092211 | | |
| Lab Sample ID: | MC3883-7 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 94.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31490.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1128 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.2 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 15.3 | 17 | 13 | mg/kg | J |
| | TPH (>C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 87% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE10 (17.5-20)092211 DUP | | |
| Lab Sample ID: | MC3883-8 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 95.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55113.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 2.13 g | 10.0 ml | 10.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 12000 | 2900 | ug/kg | |
| 107-02-8 | Acrolein | ND | 62000 | 42000 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 12000 | 5000 | ug/kg | |
| 71-43-2 | Benzene | 1130 | 1200 | 310 | ug/kg | J |
| 108-86-1 | Bromobenzene | ND | 12000 | 470 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 12000 | 2600 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 5000 | 520 | ug/kg | |
| 75-25-2 | Bromoform | ND | 5000 | 1200 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 5000 | 1700 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 12000 | 2900 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 12000 | 3100 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 4230 | 12000 | 410 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 12000 | 1600 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 12000 | 2400 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 5000 | 560 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 5000 | 230 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 12000 | 640 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 12000 | 12000 | ug/kg | |
| 67-66-3 | Chloroform | ND | 5000 | 370 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 12000 | 530 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 12000 | 350 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 12000 | 2800 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 12000 | 12000 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 5000 | 1600 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 5000 | 470 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 5000 | 370 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 5000 | 360 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 5000 | 350 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 5000 | 850 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 5000 | 380 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 5000 | 360 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 5000 | 790 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | SVE10 (17.5-20)092211 DUP | | |
| **Lab Sample ID:** | MC3883-8 | **Date Sampled:** | 09/22/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/23/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | 95.7 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 5000 | 670 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 5000 | 620 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 5000 | 560 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 12000 | 2900 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 12000 | 460 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 12000 | 480 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 5000 | 2500 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 5000 | 1700 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 62000 | 62000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 12000 | 7700 | ug/kg | |
| 100-41-4 | Ethylbenzene | 74700 J | 5000 | 320 | ug/kg J | |
| 87-68-3 | Hexachlorobutadiene | ND | 12000 | 12000 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 12000 | 2600 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 14100 | 12000 | 390 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | 2800 | 12000 | 400 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 5000 | 1500 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 12000 | 2100 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 12000 | 760 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 5000 | 890 | ug/kg | |
| 91-20-3 | Naphthalene | 22300 | 12000 | 12000 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 40700 | 12000 | 400 | ug/kg | |
| 100-42-5 | Styrene | ND | 12000 | 1200 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 12000 | 2500 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 5000 | 440 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 5000 | 420 | ug/kg | |
| 108-88-3 | Toluene | 1190 | 12000 | 440 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 12000 | 2700 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 12000 | 12000 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 5000 | 450 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 5000 | 630 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 5000 | 480 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 5000 | 2300 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 12000 | 520 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 215000 J | 12000 | 390 | ug/kg J | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 52700 | 12000 | 450 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 12000 | 2900 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 5000 | 1600 | ug/kg | |
| | m,p-Xylene | 175000 J | 5000 | 620 | ug/kg J | |
| 95-47-6 | o-Xylene | 16000 | 5000 | 460 | ug/kg | |
| 1330-20-7 | Xylene (total) | 192000 J | 5000 | 310 | ug/kg J | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE10 (17.5-20)092211 DUP | | |
| Lab Sample ID: | MC3883-8 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 95.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 109% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 105% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 118% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE10 (17.5-20)092211 DUP | | |
| Lab Sample ID: | MC3883-8 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8015 | Percent Solids: | 95.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24350.D | 1 | 10/05/11 | WS | n/a | n/a | GBH1337 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.49 g | 10.0 ml | 10.0 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 1380 J | 150 | 29 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 96% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.8

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE10 (17.5-20)092211 DUP | | |
| Lab Sample ID: | MC3883-8 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 95.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31492.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1128 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.5 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 220 | 17 | 13 | mg/kg | |
| | TPH (> C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 86% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE12 (15-17.5)092211 | | |
| Lab Sample ID: | MC3883-9 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 86.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55114.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.07 g | 10.0 ml | 5.0 ul |
| Run #2 | | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 15000 | 3500 | ug/kg | |
| 107-02-8 | Acrolein | ND | 75000 | 51000 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 15000 | 6000 | ug/kg | |
| 71-43-2 | Benzene | 66400 | 1500 | 380 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 15000 | 580 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 15000 | 3100 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 6000 | 630 | ug/kg | |
| 75-25-2 | Bromoform | ND | 6000 | 1400 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 6000 | 2000 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 15000 | 3600 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 15000 | 3800 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 5930 | 15000 | 500 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 15000 | 2000 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 15000 | 2900 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 6000 | 680 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 6000 | 280 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 15000 | 780 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 15000 | 15000 | ug/kg | |
| 67-66-3 | Chloroform | ND | 6000 | 450 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 15000 | 650 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 15000 | 420 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 15000 | 3400 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 15000 | 15000 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 6000 | 2000 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 6000 | 580 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 6000 | 450 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 6000 | 440 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 6000 | 420 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 6000 | 1000 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 6000 | 460 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 6000 | 440 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 6000 | 960 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE12 (15-17.5)092211 | | |
| Lab Sample ID: | MC3883-9 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 86.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 6000 | 820 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 6000 | 760 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 6000 | 690 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 15000 | 3500 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 15000 | 560 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 15000 | 580 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 6000 | 3000 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 6000 | 2100 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 75000 | 75000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 15000 | 9400 | ug/kg | |
| 100-41-4 | Ethylbenzene | 103000 | 6000 | 390 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 15000 | 15000 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 15000 | 3200 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 13000 | 15000 | 480 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 8130 | 15000 | 490 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 6000 | 1900 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 15000 | 2500 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 15000 | 920 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 6000 | 1100 | ug/kg | |
| 91-20-3 | Naphthalene | 28800 | 15000 | 15000 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 18600 | 15000 | 490 | ug/kg | |
| 100-42-5 | Styrene | ND | 15000 | 1500 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 15000 | 3000 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 6000 | 530 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 6000 | 510 | ug/kg | |
| 108-88-3 | Toluene | 311000 | 15000 | 540 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 15000 | 3300 | ng/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 15000 | 15000 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 6000 | 550 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 6000 | 770 | ng/kg | |
| 79-01-6 | Trichloroethene | ND | 6000 | 590 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 6000 | 2800 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 15000 | 630 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 80000 | 15000 | 470 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 24800 | 15000 | 550 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 15000 | 3500 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 6000 | 1900 | ug/kg | |
| | m,p-Xylene | 203000 | 6000 | 760 | ug/kg | |
| 95-47-6 | o-Xylene | 62400 | 6000 | 560 | ug/kg | |
| 1330-20-7 | Xylene (total) | 266000 | 6000 | 380 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.9

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE12 (15-17.5)092211 | | |
| Lab Sample ID: | MC3883-9 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8260B | Percent Solids: | 86.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 111% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 111% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 115% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.9

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE12 (15-17.5)092211 | | |
| Lab Sample ID: | MC3883-9 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846 8015 | Percent Solids: | 86.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24349.D | 1 | 10/05/11 | WS | n/a | n/a | GBH1337 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.07 g | 10.0 ml | 5.0 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 7900 | 300 | 57 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 103% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE12 (15-17.5)092211 | | |
| Lab Sample ID: | MC3883-9 | Date Sampled: | 09/22/11 |
| Matrix: | SO - Soil | Date Received: | 09/23/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 86.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31511.D | 1 | 10/07/11 | KD | 09/27/11 | OP26402 | GBG1129 |
| Run #2 | BG31521.D | 10 | 10/07/11 | KD | 09/27/11 | OP26402 | GBG1130 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.3 g | 1.0 ml |
| Run #2 | 15.3 g | 1.0 ml |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 6310 [a] | 190 | 140 | mg/kg | |
| | TPH (>C28-C40) | 172 | 19 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 88% | 96% | 24-147% |

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES



## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

LAB (LOCATION)

☐ XENCO (_____)

☐ CALSCIENCE (_____)

☑ OTHER Accutest Labs, 495 Technology Ctr W.

☐ STL (_____)

Lab Vendor #

# Shell Oil Products Chain Of Custody Record

URS

Please Check Appropriate Box: ☑ ENV. SERVICES ☐ MOTIVA RETAIL ☐ SHELL RETAIL ☐ MOTIVA SO&CH ☐ CONSULTANT ☐ LUBES ☐ SHELL PIPELINE ☐ OTHER: _____

Print Bill To Contact Name: Jeff Adams

PO #:

INCIDENT # (ENV SERVICES): 9721840

SAP #: 340081

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 9-22-11

PAGE: 1 of 1

URS CORPORATION

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300; ST. LOUIS, MO 63110

CONTACT (Person to receive report): Elizabeth Kunkel

TELEPHONE: 314-743-4170 FAX: 314-429-0462 E-mail To Contact: elizabeth.kunkel@urscorp.com

SITE ADDRESS: Street and City: 170 EAST RAND AVENUE – HARTFORD; State: IL

B OF (IF DIFFERENT FROM): Company, Office Location

PHONE NO.:

E-mail:

CONSULTANT PROJECT NO.: Roxana SVE Install 2011 / 21562581.00014

SAMPLER(S) (Print): Lindsay Rathrow

LAB USE ONLY: MC3883

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY:

DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C°: Cooler #1 | Cooler #2 | Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
* Please include "J" values on Reports.
* Please provide sample receipt upon login.

☑ SHELL CONTRACT RATE APPLIES
☐ STATE REIMBURSEMENT RATE APPLIES
☐ EDD NOT NEEDED
☑ RECEIPT VERIFICATION REQUESTED
☐ PROVIDE LEDD DESK

REQUESTED ANALYSIS

FIELD NOTES:

TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE HCL | HNO3 | H2SO4 | CHOH | MeOH | SOM | NONE | OTHER | # of Cont | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | SVE20(25-27.5)092211 | 9.22.11 | 1550 | Soil | | | | 2 | 2 | 2 | | | 6 | X | X | | |
| -2 | SVE13(17.5-20)092211 | 9.22.11 | 1455 | Soil | | | | 2 | 2 | 2 | | | 6 | X | X | | |
| -3 | SVE10(17.5-20)092211 | 9.22.11 | 0920 | Soil | | | | 2 | 2 | 2 | | | 6 | X | X | | |
| -4 | VMP3d(10-11)092211 | 9.22.11 | 1446 | Soil | | | | 2 | 2 | 2 | | | 6 | X | X | | |
| -5 | SVE33(27.5-30)092211 | 9.22.11 | 1320 | Soil | | | | 2 | 2 | 2 | | | 6 | X | X | | |
| -6 | SVE11(12.5-15)092211 | 9.22.11 | 1045 | Soil | | | | 2 | 2 | 2 | | | 6 | X | X | | |
| -7 | SVE32(25-27.5)092211 | 9.22.11 | 1005 | Soil | | | | 2 | 2 | 2 | | | 6 | X | X | | 138, 1016 |
| -8 | SVE10(17.5-20)092211 Dup | 9.22.11 | 0920 | Soil | | | | 2 | 2 | 2 | | | 6 | X | X | | 1c3 |
| -9 | SVE12(15-17.5)092211 | 9.22.11 | 1400 | Soil | | | | 2 | 2 | 2 | | | 6 | X | X | | |
| -10 | TB092211 | 9.22.11 | 1700 | Water | 1 | | | | | | | | | X | X | | |

| Relinquished by (Signature) | Received by (Signature) | Date | Time |
|---|---|---|---|
| Lindsay Rathrow 9.22.11 | FedEx | | 1700 |
| FedEx | | 9/23/11 | 09:15 |
| | | | |

Temp 0.8°C

MC3883: Chain of Custody
Page 1 of 3

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC3883 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 9/23/2011 Delivery Method: FedEx

Project: EAST RAND AVE,HARTFORD,IL No. Coolers: 1 Airbill #'s: N/A

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2. Custody Seals Intact: | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification: | Infared gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservation | Y | N | N/A |
|---|---|---|---|
| 1. Trip Blank present / cooler: | ☐ | ☑ | |
| 2. Trip Blank listed on COC: | ☑ | ☐ | |
| 3. Samples preserved properly: | ☑ | ☐ | |
| 4. VOCs headspace free: | ☐ | ☐ | ☑ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles: | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree: | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1. Sample rec'd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3. Condition of sample: | Intact |

| Sample Integrity - Instructions | Y | N | N/A |
|---|---|---|---|
| 1. Analysis requested is clear: | ☑ | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | ☑ | |
| 3. Sufficient volume rec'd for analysis: | ☑ | ☐ | |
| 4. Compositing instructions clear: | ☐ | ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ | ☐ | ☑ |

Comments

trip blank on COC not with samples

Accutest Laboratories
V.508 481.6200

495 Technology Center West Bldg One
F 508 481.7753

Marlborough, MA
www.accutest.com

4.1

4

**MC3883: Chain of Custody**
**Page 2 of 3**

ACCUTEST

## Sample Receipt Summary - Problem Resolution

**Accutest Job Number:** MC3883

**CSR:** Jeremy Vienneau **Response Date:** 9/26/2011

**Response:** Client was informed that we did not receive a Trip Blank. See email in file.



Accutest Laboratories
V:508.481.6200

495 Technology Center West, Bldg One
F: 508.481.7753

Marlborough, MA
www.accutest.com

**MC3883: Chain of Custody**
**Page 3 of 3**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3883

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3883-1 Collected: 22-SEP-11 15:50 By: LR | | | Received: 23-SEP-11 By: SAP | | | |
| SVE20 (25-27.5)092211 | | | | | | |
| MC3883-1 | SM21 2540 B MOD. | 26-SEP-11 | HS | | | %SOL |
| MC3883-1 | SW846 8015 | 27-SEP-11 06:36 | WS | | | V8015GRO |
| MC3883-1 | SW846 8260B | 30-SEP-11 11:51 | AMY | | | V8260SL |
| MC3883-1 | SW846-8015 | 06-OCT-11 22:50 | KD | 27-SEP-11 | MEW | B8015DROORO |
| MC3883-2 Collected: 22-SEP-11 14:55 By: LR | | | Received: 23-SEP-11 By: SAP | | | |
| SVE13 (17.5-20)092211 | | | | | | |
| MC3883-2 | SM21 2540 B MOD. | 26-SEP-11 | HS | | | %SOL |
| MC3883-2 | SW846 8015 | 27-SEP-11 05:57 | WS | | | V8015GRO |
| MC3883-2 | SW846 8260B | 29-SEP-11 17:14 | GK | | | V8260SL |
| MC3883-2 | SW846-8015 | 06-OCT-11 22:03 | KD | 27-SEP-11 | MEW | B8015DROORO |
| MC3883-3 Collected: 22-SEP-11 09:20 By: LR | | | Received: 23-SEP-11 By: SAP | | | |
| SVE10 (17.5-20)092211 | | | | | | |
| MC3883-3 | SM21 2540 B MOD. | 26-SEP-11 | HS | | | %SOL |
| MC3883-3 | SW846 8015 | 27-SEP-11 05:17 | WS | | | V8015GRO |
| MC3883-3 | SW846 8260B | 29-SEP-11 19:59 | GK | | | V8260SL |
| MC3883-3 | SW846-8015 | 06-OCT-11 19:43 | KD | 27-SEP-11 | MEW | B8015DROORO |
| MC3883-4 Collected: 22-SEP-11 14:40 By: LR | | | Received: 23-SEP-11 By: SAP | | | |
| VMP36 (10-11)092211 | | | | | | |
| MC3883-4 | SM21 2540 B MOD. | 26-SEP-11 | HS | | | %SOL |
| MC3883-4 | SW846 8015 | 27-SEP-11 04:37 | WS | | | V8015GRO |
| MC3883-4 | SW846 8260B | 29-SEP-11 19:32 | GK | | | V8260SL |
| MC3883-4 | SW846-8015 | 07-OCT-11 01:10 | KD | 27-SEP-11 | MEW | B8015DROORO |
| MC3883-4 | SW846-8015 | 07-OCT-11 11:19 | KD | 27-SEP-11 | MEW | B8015DROORO |
| MC3883-5 Collected: 22-SEP-11 13:20 By: LR | | | Received: 23-SEP-11 By: SAP | | | |
| SVE33 (27.5-30)092211 | | | | | | |
| MC3883-5 | SM21 2540 B MOD. | 26-SEP-11 | HS | | | %SOL |
| MC3883-5 | SW846 8015 | 27-SEP-11 07:16 | WS | | | V8015GRO |
| MC3883-5 | SW846 8260B | 30-SEP-11 12:22 | AMY | | | V8260SL |
| MC3883-5 | SW846-8015 | 06-OCT-11 17:22 | KD | 27-SEP-11 | MEW | B8015DROORO |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3883

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3883-6 | Collected: 22-SEP-11 10:45 By: LR | | Received: 23-SEP-11 | By: SAP | | |
| SVE11 (12.5-15)092211 | | | | | | |
| MC3883-6 | SM21 2540 B MOD. | 26-SEP-11 | HS | | | %SOL |
| MC3883-6 | SW846 8260B | 29-SEP-11 20:27 | GK | | | V8260SL |
| MC3883-6 | SW846 8015 | 05-OCT-11 03:19 | WS | | | V8015GRO |
| MC3883-6 | SW846-8015 | 06-OCT-11 23:36 | KD | 27-SEP-11 | MEW | B8015DROORO |
| MC3883-6 | SW846-8015 | 07-OCT-11 10:04 | KD | 27-SEP-11 | MEW | B8015DROORO |
| MC3883-7 | Collected: 22-SEP-11 10:05 By: LR | | Received: 23-SEP-11 | By: SAP | | |
| SVE32 (25-27.5)092211 | | | | | | |
| MC3883-7 | SM21 2540 B MOD. | 26-SEP-11 | HS | | | %SOL |
| MC3883-7 | SW846 8260B | 29-SEP-11 17:41 | GK | | | V8260SL |
| MC3883-7 | SW846 8015 | 05-OCT-11 03:59 | WS | | | V8015GRO |
| MC3883-7 | SW846-8015 | 06-OCT-11 18:09 | KD | 27-SEP-11 | MEW | B8015DROORO |
| MC3883-8 | Collected: 22-SEP-11 09:20 By: LR | | Received: 23-SEP-11 | By: SAP | | |
| SVE10 (17.5-20)092211 DUP | | | | | | |
| MC3883-8 | SM21 2540 B MOD. | 26-SEP-11 | HS | | | %SOL |
| MC3883-8 | SW846 8260B | 29-SEP-11 20:54 | GK | | | V8260SL |
| MC3883-8 | SW846 8015 | 05-OCT-11 02:39 | WS | | | V8015GRO |
| MC3883-8 | SW846-8015 | 06-OCT-11 18:56 | KD | 27-SEP-11 | MEW | B8015DROORO |
| MC3883-9 | Collected: 22-SEP-11 14:00 By: LR | | Received: 23-SEP-11 | By: SAP | | |
| SVE12 (15-17.5)092211 | | | | | | |
| MC3883-9 | SM21 2540 B MOD. | 26-SEP-11 | HS | | | %SOL |
| MC3883-9 | SW846 8260B | 29-SEP-11 21:21 | GK | | | V8260SL |
| MC3883-9 | SW846 8015 | 05-OCT-11 02:00 | WS | | | V8015GRO |
| MC3883-9 | SW846-8015 | 07-OCT-11 01:56 | KD | 27-SEP-11 | MEW | B8015DROORO |
| MC3883-9 | SW846-8015 | 07-OCT-11 12:06 | KD | 27-SEP-11 | MEW | B8015DROORO |

# Accutest Internal Chain of Custody



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/23/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3883-1.1 | Walk In Ref #9 | Hamid Siamak | 09/26/11 14:59 | Retrieve from Storage |
| MC3883-1.1 | Hamid Siamak | Walk In Ref #9 | 09/26/11 16:25 | Return to Storage |
| MC3883-1.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-1.3 | VOC Ref #10 | Amy Min Yang | 09/30/11 10:50 | Retrieve from Storage |
| MC3883-1.3 | Amy Min Yang | GCMSV | 09/30/11 10:50 | Load on Instrument |
| MC3883-1.3 | GCMSV | Amy Min Yang | 10/04/11 17:33 | Unload from Instrument |
| MC3883-1.3 | Amy Min Yang | VOC Ref #10 | 10/04/11 17:33 | Return to Storage |
| MC3883-1.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-1.5 | VOC Ref #10 | William Shao | 09/26/11 12:59 | Retrieve from Storage |
| MC3883-1.5 | William Shao | GCBH | 09/26/11 12:59 | Load on Instrument |
| MC3883-1.5 | GCBH | William Shao | 09/26/11 12:59 | Unload from Instrument |
| MC3883-1.5 | William Shao | VOC Ref #10 | 09/26/11 15:35 | Return to Storage |
| MC3883-1.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-1.6 | VOC Ref #10 | Gary Krasinski | 09/28/11 15:34 | Retrieve from Storage |
| MC3883-1.6 | Gary Krasinski | VOC Ref #10 | 09/29/11 10:59 | Return to Storage |
| MC3883-1.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-2.1 | Walk In Ref #9 | Hamid Siamak | 09/26/11 14:59 | Retrieve from Storage |
| MC3883-2.1 | Hamid Siamak | Walk In Ref #9 | 09/26/11 16:25 | Return to Storage |
| MC3883-2.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-2.5 | VOC Ref #10 | William Shao | 09/26/11 12:59 | Retrieve from Storage |
| MC3883-2.5 | William Shao | GCBH | 09/26/11 12:59 | Load on Instrument |
| MC3883-2.5 | GCBH | William Shao | 09/26/11 12:59 | Unload from Instrument |
| MC3883-2.5 | William Shao | VOC Ref #10 | 09/26/11 15:35 | Return to Storage |
| MC3883-2.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-2.6 | VOC Ref #10 | Gary Krasinski | 09/28/11 15:34 | Retrieve from Storage |
| MC3883-2.6 | Gary Krasinski | VOC Ref #10 | 10/03/11 09:52 | Return to Storage |
| MC3883-2.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-3.1 | Walk In Ref #9 | Hamid Siamak | 09/26/11 14:59 | Retrieve from Storage |
| MC3883-3.1 | Hamid Siamak | Walk In Ref #9 | 09/26/11 16:25 | Return to Storage |
| MC3883-3.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-3.5 | VOC Ref #10 | William Shao | 09/26/11 12:59 | Retrieve from Storage |
| MC3883-3.5 | William Shao | GCBH | 09/26/11 12:59 | Load on Instrument |
| MC3883-3.5 | GCBH | William Shao | 09/26/11 12:59 | Unload from Instrument |
| MC3883-3.5 | William Shao | VOC Ref #10 | 09/26/11 15:35 | Return to Storage |
| MC3883-3.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |

# Accutest Internal Chain of Custody

Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/23/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3883-3.6 | VOC Ref #10 | Gary Krasinski | 09/28/11 15:34 | Retrieve from Storage |
| MC3883-3.6 | Gary Krasinski | VOC Ref #10 | 10/03/11 09:52 | Return to Storage |
| MC3883-3.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-4.1 | Walk In Ref #9 | Hamid Siamak | 09/26/11 14:59 | Retrieve from Storage |
| MC3883-4.1 | Hamid Siamak | Walk In Ref #9 | 09/26/11 16:25 | Return to Storage |
| MC3883-4.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-4.5 | VOC Ref #10 | William Shao | 09/26/11 12:59 | Retrieve from Storage |
| MC3883-4.5 | William Shao | GCBH | 09/26/11 12:59 | Load on Instrument |
| MC3883-4.5 | GCBH | William Shao | 09/26/11 12:59 | Unload from Instrument |
| MC3883-4.5 | William Shao | VOC Ref #10 | 09/26/11 15:35 | Return to Storage |
| MC3883-4.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-4.6 | VOC Ref #10 | Gary Krasinski | 09/28/11 15:34 | Retrieve from Storage |
| MC3883-4.6 | Gary Krasinski | VOC Ref #10 | 10/03/11 09:52 | Return to Storage |
| MC3883-4.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-5.1 | Walk In Ref #9 | Hamid Siamak | 09/26/11 14:59 | Retrieve from Storage |
| MC3883-5.1 | Hamid Siamak | Walk In Ref #9 | 09/26/11 16:25 | Return to Storage |
| MC3883-5.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-5.4 | VOC Ref #10 | Amy Min Yang | 09/30/11 10:50 | Retrieve from Storage |
| MC3883-5.4 | Amy Min Yang | GCMSV | 09/30/11 10:50 | Load on Instrument |
| MC3883-5.4 | GCMSV | Amy Min Yang | 10/04/11 17:33 | Unload from Instrument |
| MC3883-5.4 | Amy Min Yang | VOC Ref #10 | 10/04/11 17:33 | Return to Storage |
| MC3883-5.4 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-5.5 | VOC Ref #10 | William Shao | 09/26/11 12:59 | Retrieve from Storage |
| MC3883-5.5 | William Shao | GCBH | 09/26/11 12:59 | Load on Instrument |
| MC3883-5.5 | GCBH | William Shao | 09/26/11 12:59 | Unload from Instrument |
| MC3883-5.5 | William Shao | VOC Ref #10 | 09/26/11 15:35 | Return to Storage |
| MC3883-5.5 | VOC Ref #10 | Gary Krasinski | 09/28/11 15:34 | Retrieve from Storage |
| MC3883-5.5 | Gary Krasinski | VOC Ref #10 | 09/29/11 11:30 | Return to Storage |
| MC3883-5.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-6.1 | Walk In Ref #9 | Hamid Siamak | 09/26/11 14:59 | Retrieve from Storage |
| MC3883-6.1 | Hamid Siamak | Walk In Ref #9 | 09/26/11 16:25 | Return to Storage |
| MC3883-6.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-6.6 | VOC Ref #10 | Gary Krasinski | 09/28/11 15:34 | Retrieve from Storage |
| MC3883-6.6 | Gary Krasinski | VOC Ref #10 | 10/03/11 09:52 | Return to Storage |
| MC3883-6.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |

# Accutest Internal Chain of Custody



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/23/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3883-7.1 | Walk In Ref #9 | Hamid Siamak | 09/26/11 14:59 | Retrieve from Storage |
| MC3883-7.1 | Hamid Siamak | Walk In Ref #9 | 09/26/11 16:25 | Return to Storage |
| MC3883-7.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-7.6 | VOC Ref #10 | Gary Krasinski | 09/28/11 15:34 | Retrieve from Storage |
| MC3883-7.6 | Gary Krasinski | VOC Ref #10 | 10/03/11 09:52 | Return to Storage |
| MC3883-7.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-8.1 | Walk In Ref #9 | Hamid Siamak | 09/26/11 14:59 | Retrieve from Storage |
| MC3883-8.1 | Hamid Siamak | Walk In Ref #9 | 09/26/11 16:25 | Return to Storage |
| MC3883-8.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-8.5 | VOC Ref #10 | Gary Krasinski | 09/28/11 15:34 | Retrieve from Storage |
| MC3883-8.5 | Gary Krasinski | VOC Ref #10 | 10/03/11 09:52 | Return to Storage |
| MC3883-8.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-9.1 | Walk In Ref #9 | Hamid Siamak | 09/26/11 14:59 | Retrieve from Storage |
| MC3883-9.1 | Hamid Siamak | Walk In Ref #9 | 09/26/11 16:25 | Return to Storage |
| MC3883-9.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3883-9.6 | VOC Ref #10 | Gary Krasinski | 09/28/11 15:34 | Retrieve from Storage |
| MC3883-9.6 | Gary Krasinski | VOC Ref #10 | 10/03/11 09:52 | Return to Storage |
| MC3883-9.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |

New England ACCUTEST LABORATORIES



## GC/MS Volatiles

# QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1841-MB | K55098.D | I | 09/29/11 | GK | n/a | n/a | MSK1841 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3883-2, MC3883-3, MC3883-4, MC3883-6, MC3883-7, MC3883-8, MC3883-9

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 58 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 850 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 250 | 100 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 6.3 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 9.5 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 52 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 10 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 24 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 34 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 59 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 63 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 8.3 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 33 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 48 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 11 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 4.7 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 13 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 250 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 7.4 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 11 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 7.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 56 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 250 | 250 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 33 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 100 | 9.6 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 7.5 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 7.2 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 7.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 17 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 7.6 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 7.3 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 16 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 13 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 11 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 58 | ug/kg | |

# Method Blank Summary

Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1841-MB | K55098.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3883-2, MC3883-3, MC3883-4, MC3883-6, MC3883-7, MC3883-8, MC3883-9

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 9.2 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 9.6 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 50 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 34 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 160 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 6.5 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 250 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 52 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 7.9 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.1 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 31 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 42 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 15 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 18 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 250 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 8.1 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 25 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 8.8 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 8.4 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 9.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 55 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 250 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 9.2 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 13 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 9.8 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 46 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 10 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 7.9 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 9.1 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 59 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 32 | ug/kg | |
| | m,p-Xylene | ND | 100 | 13 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 9.2 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 6.3 | ug/kg | |

# Method Blank Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1841-MB | K55098.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3883-2, MC3883-3, MC3883-4, MC3883-6, MC3883-7, MC3883-8, MC3883-9

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dihromofluoromethane | 104% | 70-130% |
| 2037-26-5 | Toluene-D8 | 102% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 110% | 70-130% |

# Method Blank Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV96-MB | V2192.D | 1 | 09/30/11 | AMY | n/a | n/a | MSV96 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3883-1, MC3883-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary

Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV96-MB | V2192.D | 1 | 09/30/11 | AMY | n/a | n/a | MSV96 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3883-1, MC3883-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV96-MB | V2192.D | 1 | 09/30/11 | AMY | n/a | n/a | MSV96 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3883-1, MC3883-5

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | 70-130% |

# Blank Spike Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV96-BS | V2193.D | 1 | 09/30/11 | AMY | n/a | n/a | MSV96 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3883-1, MC3883-5

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 69.9 | 140* a | 70-130 |
| 107-02-8 | Acrolein | 250 | 1240 | 496* b | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 328 | 656* b | 70-130 |
| 71-43-2 | Benzene | 50 | 56.0 | 112 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 48.3 | 97 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 50.8 | 102 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 51.8 | 104 | 70-130 |
| 75-25-2 | Bromoform | 50 | 44.5 | 89 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 53.8 | 108 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 55.1 | 110 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 57.2 | 114 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 51.8 | 104 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 50.1 | 100 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 54.0 | 108 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 48.3 | 97 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 55.4 | 111 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 62.6 | 125 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 17.4 | 35 | 10-160 |
| 67-66-3 | Chloroform | 50 | 53.5 | 107 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 56.5 | 113 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 49.4 | 99 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 50.7 | 101 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 44.2 | 88 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 49.4 | 99 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 50.0 | 100 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 53.4 | 107 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 49.8 | 100 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 49.2 | 98 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 51.8 | 104 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 58.5 | 117 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 53.0 | 106 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 56.8 | 114 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 52.5 | 105 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 53.8 | 108 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 54.3 | 109 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 50.2 | 100 | 70-130 |

# Blank Spike Summary

Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV96-BS | V2193.D | 1 | 09/30/11 | AMY | n/a | n/a | MSV96 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3883-1, MC3883-5

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 56.5 | 113 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 52.0 | 104 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 53.4 | 107 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 55.9 | 112 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 252 | 101 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 54.0 | 108 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 55.1 | 110 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 49.7 | 99 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 64.4 | 129 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 59.0 | 118 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 54.0 | 108 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 53.0 | 106 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 56.9 | 114 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 53.0 | 106 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 60.0 | 120 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 52.3 | 105 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 52.1 | 104 | 70-130 |
| 100-42-5 | Styrene | 50 | 54.4 | 109 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 51.2 | 102 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 51.4 | 103 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 49.8 | 100 | 70-130 |
| 108-88-3 | Toluene | 50 | 51.3 | 103 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 51.7 | 103 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 54.4 | 109 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 50.4 | 101 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 50.5 | 101 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 50.2 | 100 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 48.2 | 96 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 48.4 | 97 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 50.3 | 101 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 50.0 | 100 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 54.2 | 108 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 49.2 | 98 | 70-130 |
| | m,p-Xylene | 100 | 111 | 111 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 54.5 | 109 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 166 | 111 | 70-130 |

# Blank Spike Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV96-BS | V2193.D | 1 | 09/30/11 | AMY | n/a | n/a | MSV96 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3883-1, MC3883-5

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1841-BS | K55095.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| MSK1841-BSD | K55096.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3883-2, MC3883-3, MC3883-4, MC3883-6, MC3883-7, MC3883-8, MC3883-9

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 2490 | 100 | 2510 | 100 | 1 | 70-130/25 |
| 107-02-8 | Acrolein | 12500 | 14800 | 118 | 15000 | 120 | 1 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 2500 | 2410 | 96 | 2460 | 98 | 2 | 70-130/25 |
| 71-43-2 | Benzene | 2500 | 2450 | 98 | 2370 | 95 | 3 | 70-130/25 |
| 108-86-1 | Bromobenzene | 2500 | 2530 | 101 | 2460 | 98 | 3 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 2500 | 2420 | 97 | 2390 | 96 | 1 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 2500 | 2510 | 100 | 2460 | 98 | 2 | 70-130/25 |
| 75-25-2 | Bromoform | 2500 | 2750 | 110 | 2740 | 110 | 0 | 70-130/25 |
| 74-83-9 | Bromomethane | 2500 | 2350 | 94 | 2240 | 90 | 5 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 2610 | 104 | 2620 | 105 | 0 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 2500 | 2570 | 103 | 2440 | 98 | 5 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2530 | 101 | 2430 | 97 | 4 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2480 | 99 | 2360 | 94 | 5 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 2500 | 2550 | 102 | 2450 | 98 | 4 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2480 | 99 | 2360 | 94 | 5 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 2500 | 2610 | 104 | 2580 | 103 | 1 | 70-130/25 |
| 75-00-3 | Chloroethane | 2500 | 2530 | 101 | 2430 | 97 | 4 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 1480 | 59 | 1480 | 59 | 0 | 10-160/25 |
| 67-66-3 | Chloroform | 2500 | 2380 | 95 | 2320 | 93 | 3 | 70-130/25 |
| 74-87-3 | Chloromethane | 2500 | 2300 | 92 | 2200 | 88 | 4 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2410 | 96 | 2350 | 94 | 3 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2520 | 101 | 2430 | 97 | 4 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 2500 | 2200 | 88 | 2180 | 87 | 1 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 2500 | 2740 | 110 | 2730 | 109 | 0 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 2500 | 2700 | 108 | 2710 | 108 | 0 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2520 | 101 | 2490 | 100 | 1 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2550 | 102 | 2480 | 99 | 3 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2520 | 101 | 2460 | 98 | 2 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 2370 | 95 | 2210 | 88 | 7 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2370 | 95 | 2320 | 93 | 2 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2370 | 95 | 2310 | 92 | 3 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2520 | 101 | 2440 | 98 | 3 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2330 | 93 | 2270 | 91 | 3 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2470 | 99 | 2340 | 94 | 5 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2420 | 97 | 2390 | 96 | 1 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2500 | 100 | 2540 | 102 | 2 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1841-BS | K55095.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| MSK1841-BSD | K55096.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3883-2, MC3883-3, MC3883-4, MC3883-6, MC3883-7, MC3883-8, MC3883-9

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2690 | 108 | 2520 | 101 | 7 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2530 | 101 | 2410 | 96 | 5 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2550 | 102 | 2480 | 99 | 3 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2720 | 109 | 2680 | 107 | 1 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 12500 | 12500 | 100 | 12300 | 98 | 2 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2540 | 102 | 2560 | 102 | 1 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 2500 | 2660 | 106 | 2600 | 104 | 2 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2410 | 96 | 2290 | 92 | 5 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 2500 | 2820 | 113 | 2780 | 111 | 1 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 2500 | 2930 | 117 | 2800 | 112 | 5 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2550 | 102 | 2480 | 99 | 3 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2330 | 93 | 2350 | 94 | 1 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 2520 | 101 | 2500 | 100 | 1 | 70-130/25 |
| 74-95-3 | Methylene bromide | 2500 | 2510 | 100 | 2470 | 99 | 2 | 70-130/25 |
| 75-09-2 | Methylene chloride | 2500 | 2510 | 100 | 2450 | 98 | 2 | 70-130/25 |
| 91-20-3 | Naphthalene | 2500 | 2260 | 90 | 2260 | 90 | 0 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 2500 | 2540 | 102 | 2410 | 96 | 5 | 70-130/25 |
| 100-42-5 | Styrene | 2500 | 2720 | 109 | 2670 | 107 | 2 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2650 | 106 | 2600 | 104 | 2 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2510 | 100 | 2520 | 101 | 0 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 2500 | 2710 | 108 | 2590 | 104 | 5 | 70-130/25 |
| 108-88-3 | Toluene | 2500 | 2520 | 101 | 2440 | 98 | 3 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 2210 | 88 | 2130 | 85 | 4 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2350 | 94 | 2330 | 93 | 1 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2430 | 97 | 2310 | 92 | 5 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2490 | 100 | 2470 | 99 | 1 | 70-130/25 |
| 79-01-6 | Trichloroethene | 2500 | 2490 | 100 | 2420 | 97 | 3 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2400 | 96 | 2250 | 90 | 6 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2490 | 100 | 2470 | 99 | 1 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2490 | 100 | 2370 | 95 | 5 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2460 | 98 | 2360 | 94 | 4 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 2500 | 1990 | 80 | 2000 | 80 | 1 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 2500 | 2170 | 87 | 2040 | 82 | 6 | 70-130/25 |
| | m,p-Xylene | 5000 | 5380 | 108 | 5210 | 104 | 3 | 70-130/25 |
| 95-47-6 | o-Xylene | 2500 | 2640 | 106 | 2600 | 104 | 2 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 7500 | 8020 | 107 | 7810 | 104 | 3 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1841-BS | K55095.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| MSK1841-BSD | K55096.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3883-2, MC3883-3, MC3883-4, MC3883-6, MC3883-7, MC3883-8, MC3883-9

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 102% | 101% | 70-130% |
| 2037-26-5 | Toluene-D8 | 111% | 106% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 106% | 104% | 70-130% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3895-4MS | K55107.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| MC3895-4MSD | K55108.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| MC3895-4 | K55099.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3883-2, MC3883-3, MC3883-4, MC3883-6, MC3883-7, MC3883-8, MC3883-9

| CAS No. | Compound | MC3895-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 3830 | 3610 | 94 | 3900 | 102 | 8 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 19100 | 24400 | 127 | 25000 | 131* [a] | 2 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 3830 | 3770 | 98 | 3810 | 99 | 1 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 3830 | 3620 | 95 | 3910 | 102 | 8 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 3830 | 3710 | 97 | 3960 | 103 | 7 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 3830 | 3660 | 96 | 3890 | 102 | 6 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 3830 | 3670 | 96 | 3980 | 104 | 8 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 3830 | 4070 | 106 | 4120 | 108 | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 3830 | 3410 | 89 | 3810 | 99 | 11 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 3830 | 3840 | 100 | 3930 | 103 | 2 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 3830 | 3720 | 97 | 4000 | 104 | 7 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 3830 | 3710 | 97 | 3950 | 103 | 6 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 3830 | 3620 | 95 | 3890 | 102 | 7 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 3830 | 3790 | 99 | 4150 | 108 | 9 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 3830 | 3630 | 95 | 3950 | 103 | 8 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 3830 | 3880 | 101 | 4120 | 108 | 6 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 3830 | 3740 | 98 | 4160 | 109 | 11 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 3830 | 2170 | 57 | 2210 | 58 | 2 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 3830 | 3540 | 92 | 3800 | 99 | 7 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 3830 | 3410 | 89 | 3750 | 98 | 9 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 3830 | 3570 | 93 | 3820 | 100 | 7 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 3830 | 3680 | 96 | 3930 | 103 | 7 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 3830 | 3240 | 85 | 3360 | 88 | 4 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 3830 | 4090 | 107 | 4270 | 111 | 4 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 3830 | 4020 | 105 | 4180 | 109 | 4 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 3830 | 3740 | 98 | 4020 | 105 | 7 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 3830 | 3730 | 97 | 3980 | 104 | 6 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 3830 | 3720 | 97 | 3990 | 104 | 7 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 3830 | 3570 | 93 | 3920 | 102 | 9 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 3830 | 3540 | 92 | 3860 | 101 | 9 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 3830 | 3480 | 91 | 3710 | 97 | 6 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 3830 | 3790 | 99 | 4140 | 108 | 9 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 3830 | 3460 | 90 | 3740 | 98 | 8 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 3830 | 3620 | 95 | 3950 | 103 | 9 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 3830 | 3560 | 93 | 3840 | 100 | 8 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 3830 | 3790 | 99 | 3980 | 104 | 5 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3895-4MS | K55107.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| MC3895-4MSD | K55108.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |
| MC3895-4 | K55099.D | 1 | 09/29/11 | GK | n/a | n/a | MSK1841 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3883-2, MC3883-3, MC3883-4, MC3883-6, MC3883-7, MC3883-8, MC3883-9

| CAS No. | Compound | MC3895-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 3830 | 3850 | 101 | 4080 | 107 | 6 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 3830 | 3640 | 95 | 3990 | 104 | 9 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 3830 | 3710 | 97 | 3960 | 103 | 7 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 3830 | 3940 | 103 | 4210 | 110 | 7 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 19100 | 18700 | 98 | 18800 | 98 | 1 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 3830 | 3840 | 100 | 3910 | 102 | 2 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 3830 | 3910 | 102 | 4190 | 109 | 7 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 3830 | 3510 | 92 | 3810 | 99 | 8 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 3830 | 4030 | 105 | 4050 | 106 | 0 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 3830 | 4250 | 111 | 4590 | 120 | 8 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 3830 | 3720 | 97 | 4030 | 105 | 8 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 3830 | 3630 | 95 | 3760 | 98 | 4 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 3830 | 3880 | 101 | 3910 | 102 | 1 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 3830 | 3690 | 96 | 3880 | 101 | 5 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 3830 | 3760 | 98 | 4010 | 105 | 6 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 3830 | 3420 | 89 | 3520 | 92 | 3 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 3830 | 3690 | 96 | 3990 | 104 | 8 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 3830 | 4000 | 104 | 4270 | 111 | 7 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 3830 | 3930 | 103 | 4140 | 108 | 5 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 3830 | 3780 | 99 | 3840 | 100 | 2 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 3830 | 3900 | 102 | 4210 | 110 | 8 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 3830 | 3690 | 96 | 3960 | 103 | 7 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 3830 | 3220 | 84 | 3520 | 92 | 9 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 3830 | 3510 | 92 | 3700 | 97 | 5 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 3830 | 3590 | 94 | 3900 | 102 | 8 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 3830 | 3680 | 96 | 3930 | 103 | 7 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 3830 | 3660 | 96 | 4000 | 104 | 9 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 3830 | 3590 | 94 | 3960 | 103 | 10 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 3830 | 3720 | 97 | 3760 | 98 | 1 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 3830 | 3660 | 96 | 3890 | 102 | 6 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 3830 | 3590 | 94 | 3880 | 101 | 8 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 3830 | 2980 | 78 | 3040 | 79 | 2 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 3830 | 2970 | 78 | 3410 | 89 | 14 | 70-130/30 |
| | m,p-Xylene | ND | | 7660 | 7910 | 103 | 8360 | 109 | 6 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 3830 | 3870 | 101 | 4120 | 108 | 6 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 11500 | 11800 | 103 | 12500 | 109 | 6 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3895-4MS | K55107.D | 1 | 09/29/11 | GK | n/a | n/a | MSKI841 |
| MC3895-4MSD | K55108.D | 1 | 09/29/11 | GK | n/a | n/a | MSKI841 |
| MC3895-4 | K55099.D | 1 | 09/29/11 | GK | n/a | n/a | MSKI841 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3883-2, MC3883-3, MC3883-4, MC3883-6, MC3883-7, MC3883-8, MC3883-9

| CAS No. | Surrogate Recoveries | MS | MSD | MC3895-4 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 95% | 101% | 97% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 107% | 94% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | 103% | 103% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3904-3MS | V2201.D | 1 | 09/30/11 | AMY | n/a | n/a | MSV96 |
| MC3904-3MSD | V2202.D | 1 | 09/30/11 | AMY | n/a | n/a | MSV96 |
| MC3904-3 | V2199.D | 1 | 09/30/11 | AMY | n/a | n/a | MSV96 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3883-1, MC3883-5

| CAS No. | Compound | MC3904-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 159 | | 47.4 | 227 | 144* [a] | 175 | 36* [a] | 26 | 70-130/30 |
| 107-02-8 | Acrolein | 24 | U | 237 | 1020 | 431* [b] | 956 | 431* [b] | 6 | 70-130/30 |
| 107-13-1 | Acrylonitrile | 4.9 | U | 47.4 | 316 | 667* [b] | 246 | 554* [b] | 25 | 70-130/30 |
| 71-43-2 | Benzene | 0.49 | U | 47.4 | 55.5 | 117 | 42.9 | 97 | 26 | 70-130/30 |
| 108-86-1 | Bromobenzene | 4.9 | U | 47.4 | 73.9 | 156* [c] | 33.0 | 74 | 77* [d] | 70-130/30 |
| 74-97-5 | Bromochloromethane | 4.9 | U | 47.4 | 50.2 | 106 | 41.8 | 94 | 18 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | 1.9 | U | 47.4 | 48.2 | 102 | 38.5 | 87 | 22 | 70-130/30 |
| 75-25-2 | Bromoform | 1.9 | U | 47.4 | 42.0 | 89 | 34.6 | 78 | 19 | 70-130/30 |
| 74-83-9 | Bromomethane | 1.9 | U | 47.4 | 51.4 | 109 | 42.6 | 96 | 19 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | 4.9 | U | 47.4 | 68.9 | 146* [c] | 70.1 | 158* [c] | 2 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | 4.9 | U | 47.4 | 102 | 215* [c] | 35.1 | 79 | 98* [d] | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | 4.9 | U | 47.4 | 93.2 | 197* [c] | 35.0 | 79 | 91* [d] | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | 4.9 | U | 47.4 | 93.1 | 197* [c] | 34.7 | 78 | 91* [d] | 70-130/30 |
| 75-15-0 | Carbon disulfide | 4.9 | U | 47.4 | 52.9 | 112 | 41.7 | 94 | 24 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | 1.9 | U | 47.4 | 46.8 | 99 | 35.0 | 79 | 29 | 70-130/30 |
| 108-90-7 | Chlorobenzene | 1.9 | U | 47.4 | 59.4 | 125 | 36.8 | 83 | 47* [d] | 70-130/30 |
| 75-00-3 | Chloroethane | 4.9 | U | 47.4 | 60.3 | 127 | 52.4 | 118 | 14 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 4.9 | U | 47.4 | ND | 0* [c] | ND | 0* [c] | nc | 10-160/30 |
| 67-66-3 | Chloroform | 1.9 | U | 47.4 | 50.9 | 107 | 40.8 | 92 | 22 | 70-130/30 |
| 74-87-3 | Chloromethane | 4.9 | U | 47.4 | 53.3 | 113 | 46.7 | 105 | 13 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | 4.9 | U | 47.4 | 83.5 | 176* [c] | 33.5 | 75 | 85* [d] | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | 4.9 | U | 47.4 | 82.2 | 174* [c] | 33.3 | 75 | 85* [d] | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 4.9 | U | 47.4 | 62.2 | 131* [c] | 40.7 | 92 | 42* [d] | 70-130/30 |
| 124-48-1 | Dibromochloromethane | 1.9 | U | 47.4 | 55.1 | 116 | 38.3 | 86 | 36* [d] | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | 1.9 | U | 47.4 | 60.1 | 127 | 44.7 | 101 | 29 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | 1.9 | U | 47.4 | 64.2 | 136* [c] | 28.6 | 64* [c] | 77* [d] | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | 1.9 | U | 47.4 | 67.7 | 143* [c] | 29.7 | 67* [c] | 78* [d] | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | 1.9 | U | 47.4 | 63.7 | 135* [c] | 28.8 | 65* [c] | 75* [d] | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | 1.9 | U | 47.4 | 47.9 | 101 | 41.5 | 93 | 14 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | 1.9 | U | 47.4 | 57.1 | 121 | 46.1 | 104 | 21 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | 1.9 | U | 47.4 | 53.4 | 113 | 43.2 | 97 | 21 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | 1.9 | U | 47.4 | 57.0 | 120 | 45.9 | 103 | 22 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | 1.9 | U | 47.4 | 50.4 | 106 | 41.0 | 92 | 21 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | 1.9 | U | 47.4 | 52.4 | 111 | 42.1 | 95 | 22 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | 1.9 | U | 47.4 | 53.3 | 113 | 41.9 | 94 | 24 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | 4.9 | U | 47.4 | 62.5 | 132* [c] | 42.9 | 97 | 37* [d] | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3904-3MS | V2201.D | 1 | 09/30/11 | AMY | n/a | n/a | MSV96 |
| MC3904-3MSD | V2202.D | 1 | 09/30/11 | AMY | n/a | n/a | MSV96 |
| MC3904-3 | V2199.D | 1 | 09/30/11 | AMY | n/a | n/a | MSV96 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3883-1, MC3883-5

| CAS No. | Compound | MC3904-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 4.9 U | | 47.4 | 54.4 | 115 | 42.9 | 97 | 24 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | 4.9 U | | 47.4 | 51.6 | 109 | 38.9 | 88 | 28 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | 1.9 U | | 47.4 | 48.5 | 102 | 39.5 | 89 | 20 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | 1.9 U | | 47.4 | 48.5 | 102 | 41.6 | 94 | 15 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | 24 U | | 237 | 185 | 78 | 368 | 166* c | 66* d | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | 4.9 U | | 47.4 | 56.0 | 118 | 51.1 | 115 | 9 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 1.9 U | | 47.4 | 64.7 | 137* c | 36.9 | 83 | 55* d | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | 4.9 U | | 47.4 | 67.5 | 143* c | 26.4 | 59* c | 88* d | 70-130/30 |
| 591-78-6 | 2-Hexanone | 4.9 U | | 47.4 | 92.2 | 195* c | 72.6 | 164* c | 24 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | 4.9 U | | 47.4 | 117 | 247* c | 43.8 | 99 | 91* d | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | 4.9 U | | 47.4 | 94.7 | 200* c | 36.1 | 81 | 90* d | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | 1.9 U | | 47.4 | 56.6 | 120 | 49.0 | 110 | 14 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 4.9 U | | 47.4 | 75.7 | 160* c | 72.3 | 163* c | 5 | 70-130/30 |
| 74-95-3 | Methylene bromide | 4.9 U | | 47.4 | 51.4 | 109 | 43.8 | 99 | 16 | 70-130/30 |
| 75-09-2 | Methylene chloride | 1.9 U | | 47.4 | 58.1 | 123 | 47.0 | 106 | 21 | 70-130/30 |
| 91-20-3 | Naphthalene | 4.9 U | | 47.4 | 26.5 | 56* c | 16.9 | 38* c | 44* d | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 4.9 U | | 47.4 | 98.0 | 207* c | 37.0 | 83 | 90* d | 70-130/30 |
| 100-42-5 | Styrene | 4.9 U | | 47.4 | 50.2 | 106 | 31.9 | 72 | 45* d | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 4.9 U | | 47.4 | 58.4 | 123 | 35.8 | 81 | 48* d | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.9 U | | 47.4 | 96.5 | 204* c | 49.0 | 110 | 65* d | 70-130/30 |
| 127-18-4 | Tetrachloroethene | 1.9 U | | 47.4 | 59.9 | 126 | 35.6 | 80 | 51* d | 70-130/30 |
| 108-88-3 | Toluene | 4.9 U | | 47.4 | 47.4 | 100 | 36.6 | 82 | 26 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 4.9 U | | 47.4 | 31.2 | 66* c | 18.1 | 41* c | 53* d | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 4.9 U | | 47.4 | 41.8 | 88 | 21.7 | 49* c | 63* d | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | 1.9 U | | 47.4 | 48.0 | 101 | 38.0 | 86 | 23 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | 1.9 U | | 47.4 | 47.7 | 101 | 41.8 | 94 | 13 | 70-130/30 |
| 79-01-6 | Trichloroethene | 1.9 U | | 47.4 | 48.5 | 102 | 37.2 | 84 | 26 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | 1.9 U | | 47.4 | 19.7 | 42* c | 37.9 | 85 | 63* d | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | 4.9 U | | 47.4 | 95.9 | 203* c | 51.1 | 115 | 61* d | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 4.9 U | | 47.4 | 84.3 | 178* c | 33.3 | 75 | 87* d | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 4.9 U | | 47.4 | 88.4 | 187* c | 34.0 | 77 | 89* d | 70-130/30 |
| 108-05-4 | Vinyl Acetate | 4.9 U | | 47.4 | 56.5 | 119 | 50.4 | 114 | 11 | 70-130/30 |
| 75-01-4 | Vinyl chloride | 1.9 U | | 47.4 | 46.2 | 98 | 40.2 | 91 | 14 | 70-130/30 |
| | m,p-Xylene | 1.9 U | | 94.7 | 127 | 134* c | 74.0 | 83 | 53* d | 70-130/30 |
| 95-47-6 | o-Xylene | 1.9 U | | 47.4 | 59.9 | 126 | 36.0 | 81 | 50* d | 70-130/30 |
| 1330-20-7 | Xylene (total) | 1.9 U | | 142 | 187 | 132* c | 110 | 83 | 52* d | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3904-3MS | V2201.D | 1 | 09/30/11 | AMY | n/a | n/a | MSV96 |
| MC3904-3MSD | V2202.D | 1 | 09/30/11 | AMY | n/a | n/a | MSV96 |
| MC3904-3 | V2199.D | 1 | 09/30/11 | AMY | n/a | n/a | MSV96 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3883-1, MC3883-5

| CAS No. | Surrogate Recoveries | MS | MSD | MC3904-3 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | 103% | 97% | 70-130% |
| 2037-26-5 | Toluene-D8 | 90% | 99% | 93% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 124% | 107% | 109% | 70-130% |

(a) Outside control limits due to high level in sample relative to spike amount.
(b) Outside control limits. Associated samples are non-detect for this compound.
(c) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(d) High RPD due to possible matrix interference and/or sample non-homogeneity.

# Volatile Internal Standard Area Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSK1841-CC1831 | Injection Date: | 09/29/11 |
| Lab File ID: | K55094.D | Injection Time: | 12:10 |
| Instrument ID: | GCMSK | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 290580 | 8.86 | 378648 | 9.71 | 182225 | 12.97 | 215801 | 15.53 | 91060 | 6.48 |
| Upper Limit [a] | 581160 | 9.36 | 757296 | 10.21 | 364450 | 13.47 | 431602 | 16.03 | 182120 | 6.98 |
| Lower Limit [b] | 145290 | 8.36 | 189324 | 9.21 | 91113 | 12.47 | 107901 | 15.03 | 45530 | 5.98 |

| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| MSK1841-BS | 304190 | 8.86 | 390128 | 9.71 | 188148 | 12.97 | 220928 | 15.53 | 95125 | 6.48 |
| MSK1841-BSD | 302310 | 8.87 | 389096 | 9.72 | 186314 | 12.97 | 220191 | 15.53 | 96128 | 6.48 |
| MSK1841-MB | 305857 | 8.87 | 410513 | 9.72 | 188336 | 12.98 | 209975 | 15.53 | 96227 | 6.49 |
| MC3895-4 | 308928 | 8.87 | 416244 | 9.72 | 188689 | 12.97 | 205440 | 15.53 | 85672 | 6.48 |
| ZZZZZZ | 307084 | 8.87 | 415619 | 9.72 | 192595 | 12.98 | 212565 | 15.53 | 93153 | 6.48 |
| ZZZZZZ | 289565 | 8.87 | 387302 | 9.72 | 180279 | 12.97 | 202561 | 15.53 | 87075 | 6.48 |
| ZZZZZZ | 290437 | 8.87 | 380586 | 9.71 | 170252 | 12.97 | 212909 | 15.53 | 90790 | 6.48 |
| ZZZZZZ | 309320 | 8.87 | 417630 | 9.72 | 188193 | 12.97 | 221205 | 15.53 | 93929 | 6.48 |
| ZZZZZZ | 309955 | 8.87 | 414219 | 9.72 | 190147 | 12.97 | 220752 | 15.53 | 90475 | 6.48 |
| MC3883-2 | 298453 | 8.87 | 403104 | 9.72 | 181070 | 12.97 | 211211 | 15.53 | 81968 | 6.48 |
| MC3883-7 | 301836 | 8.87 | 407094 | 9.72 | 186522 | 12.97 | 213830 | 15.53 | 83875 | 6.48 |
| MC3895-4MS | 305746 | 8.87 | 399854 | 9.72 | 190433 | 12.97 | 225294 | 15.53 | 99623 | 6.48 |
| MC3895-4MSD | 288745 | 8.87 | 377213 | 9.71 | 183093 | 12.97 | 214637 | 15.53 | 84593 | 6.48 |
| ZZZZZZ | 298724 | 8.86 | 402828 | 9.71 | 183467 | 12.97 | 218032 | 15.53 | 96512 | 6.48 |
| MC3883-4 | 302332 | 8.87 | 402479 | 9.71 | 183871 | 12.97 | 220032 | 15.53 | 97296 | 6.48 |
| MC3883-3 | 308531 | 8.87 | 410123 | 9.72 | 185977 | 12.97 | 215611 | 15.53 | 88859 | 6.47 |
| MC3883-6 | 305824 | 8.87 | 405206 | 9.72 | 176586 | 12.97 | 212469 | 15.53 | 82007 | 6.48 |
| MC3883-8 | 304405 | 8.87 | 406997 | 9.72 | 181461 | 12.97 | 208589 | 15.53 | 79194 | 6.48 |
| MC3883-9 | 292286 | 8.87 | 385651 | 9.72 | 180424 | 12.97 | 216026 | 15.53 | 91452 | 6.48 |
| ZZZZZZ | 314752 | 8.86 | 422863 | 9.71 | 189855 | 12.97 | 223464 | 15.53 | 92773 | 6.48 |
| ZZZZZZ | 310002 | 8.87 | 415532 | 9.71 | 189400 | 12.97 | 214078 | 15.53 | 89591 | 6.48 |
| ZZZZZZ | 300179 | 8.86 | 401443 | 9.71 | 184205 | 12.97 | 203200 | 15.53 | 85338 | 6.48 |
| ZZZZZZ | 298074 | 8.86 | 399053 | 9.71 | 184040 | 12.97 | 203451 | 15.53 | 85949 | 6.48 |
| ZZZZZZ | 297863 | 8.86 | 403050 | 9.71 | 183178 | 12.97 | 211816 | 15.53 | 84685 | 6.50 |
| ZZZZZZ | 286130 | 8.87 | 381848 | 9.72 | 174211 | 12.97 | 205807 | 15.53 | 83318 | 6.48 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV96-CC67 | Injection Date: | 09/30/11 |
| Lab File ID: | V2191.D | Injection Time: | 08:49 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 391083 | 6.55 | 595533 | 7.74 | 316396 | 11.09 | 321924 | 13.33 | 111436 | 3.51 |
| Upper Limit [a] | 782166 | 7.05 | 1191066 | 8.24 | 632792 | 11.59 | 643848 | 13.83 | 222872 | 4.01 |
| Lower Limit [b] | 195542 | 6.05 | 297767 | 7.24 | 158198 | 10.59 | 160962 | 12.83 | 55718 | 3.01 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSV96-MB | 369693 | 6.56 | 582449 | 7.74 | 312675 | 11.09 | 314869 | 13.32 | 159094 | 3.51 |
| MSV96-BS | 381857 | 6.55 | 577217 | 7.74 | 308381 | 11.09 | 310889 | 13.32 | 108489 | 3.51 |
| ZZZZZZ | 369051 | 6.55 | 578896 | 7.74 | 308048 | 11.09 | 302459 | 13.32 | 105065 | 3.51 |
| ZZZZZZ | 366615 | 6.55 | 578848 | 7.74 | 308807 | 11.09 | 297106 | 13.32 | 105131 | 3.51 |
| ZZZZZZ | 355945 | 6.55 | 567463 | 7.74 | 297847 | 11.09 | 278903 | 13.32 | 114069 | 3.51 |
| MC3883-1 | 359590 | 6.55 | 575348 | 7.74 | 318728 | 11.09 | 311838 | 13.32 | 147589 | 3.51 |
| MC3883-5 | 372108 | 6.55 | 592802 | 7.74 | 323318 | 11.09 | 326353 | 13.32 | 165007 | 3.51 |
| MC3904-3 | 376694 | 6.56 | 596857 | 7.74 | 291860 | 11.09 | 241105 | 13.32 | 133075 | 3.52 |
| ZZZZZZ | 203844 | 6.55 | 327605 | 7.74 | 167758 | 11.09 | 141563[c] | 13.32 | 84005 | 3.61 |
| MC3904-3MS | 385849 | 6.56 | 569251 | 7.75 | 230904 | 11.09 | 132609[d] | 13.32 | 102943 | 3.53 |
| MC3904-3MSD | 396898 | 6.56 | 605487 | 7.75 | 310501 | 11.09 | 280191 | 13.32 | 180540 | 3.53 |
| ZZZZZZ | 382293 | 6.56 | 612443 | 7.75 | 322509 | 11.09 | 309796 | 13.32 | 120519 | 3.52 |
| ZZZZZZ | 366795 | 6.56 | 590209 | 7.74 | 310762 | 11.09 | 300855 | 13.32 | 119010 | 3.51 |
| ZZZZZZ | 370971 | 6.56 | 590961 | 7.74 | 311393 | 11.09 | 298674 | 13.32 | 107625 | 3.52 |
| ZZZZZZ | 366941 | 6.55 | 577513 | 7.74 | 302952 | 11.09 | 282507 | 13.32 | 95094 | 3.51 |
| ZZZZZZ | 360521 | 6.56 | 579170 | 7.75 | 300866 | 11.09 | 278559 | 13.32 | 99544 | 3.53 |
| ZZZZZZ | 352681 | 6.56 | 568233 | 7.75 | 297379 | 11.09 | 275278 | 13.32 | 91755 | 3.52 |
| ZZZZZZ | 348865 | 6.55 | 570727 | 7.74 | 298729 | 11.09 | 279902 | 13.32 | 100841 | 3.51 |
| ZZZZZZ | 341964 | 6.56 | 558027 | 7.74 | 293649 | 11.09 | 273401 | 13.32 | 97553 | 3.52 |
| ZZZZZZ | 354577 | 6.56 | 580947 | 7.75 | 308827 | 11.09 | 291119 | 13.32 | 106670 | 3.52 |
| ZZZZZZ | 337653 | 6.56 | 557328 | 7.75 | 292691 | 11.09 | 274104 | 13.32 | 101006 | 3.52 |
| ZZZZZZ | 337973 | 6.56 | 557990 | 7.74 | 293938 | 11.09 | 275723 | 13.32 | 98229 | 3.52 |
| ZZZZZZ | 303584 | 6.56 | 496028 | 7.74 | 203793 | 11.09 | 107073[c] | 13.32 | 103338 | 3.51 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.
(d) Outside control limits due to possible matrix interference. Confirmed by MS/MSD.

# Volatile Surrogate Recovery Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3883-1 | V2197.D | 99.0 | 98.0 | 100.0 |
| MC3883-2 | K55105.D | 108.0 | 103.0 | 112.0 |
| MC3883-3 | K55111.D | 109.0 | 107.0 | 113.0 |
| MC3883-4 | K55110.D | 112.0 | 107.0 | 118.0 |
| MC3883-5 | V2198.D | 98.0 | 97.0 | 98.0 |
| MC3883-6 | K55112.D | 110.0 | 105.0 | 113.0 |
| MC3883-7 | K55106.D | 103.0 | 108.0 | 114.0 |
| MC3883-8 | K55113.D | 109.0 | 105.0 | 118.0 |
| MC3883-9 | K55114.D | 111.0 | 111.0 | 115.0 |
| MC3895-4MS | K55107.D | 95.0 | 98.0 | 97.0 |
| MC3895-4MSD | K55108.D | 101.0 | 107.0 | 103.0 |
| MC3904-3MS | V2201.D | 100.0 | 90.0 | 124.0 |
| MC3904-3MSD | V2202.D | 103.0 | 99.0 | 107.0 |
| MSK1841-BS | K55095.D | 102.0 | 111.0 | 106.0 |
| MSK1841-BSD | K55096.D | 101.0 | 106.0 | 104.0 |
| MSK1841-MB | K55098.D | 104.0 | 102.0 | 110.0 |
| MSV96-BS | V2193.D | 100.0 | 99.0 | 99.0 |
| MSV96-MB | V2192.D | 100.0 | 95.0 | 96.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

New England ACCUTEST LABORATORIES

GC Volatiles

6

# QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1325-MB | BH24126.D | 1 | 09/26/11 | WS | n/a | n/a | GBH1325 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3883-1, MC3883-2, MC3883-3, MC3883-4, MC3883-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 0.95 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 85% | 36-148% |

# Method Blank Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1337-MB | BH24330.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1337 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3883-6, MC3883-7, MC3883-8, MC3883-9

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 0.95 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 88% | 36-148% |

# Blank Spike Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1325-BSP | BH24127.D | 1 | 09/26/11 | WS | n/a | n/a | GBH1325 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3883-1, MC3883-2, MC3883-3, MC3883-4, MC3883-5

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 20.4 | 102 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 96% | 36-148% |

# Blank Spike Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1337-BSP | BH24331.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1337 |



The QC reported here applies to the following samples: Method: SW846 8015

MC3883-6, MC3883-7, MC3883-8, MC3883-9

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 20.1 | 101 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 87% | 36-148% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3836-3MS | BH24138.D | 1 | 09/26/11 | WS | n/a | n/a | GBH1325 |
| MC3836-3MSD | BH24I39.D | 1 | 09/26/11 | WS | n/a | n/a | GBH1325 |
| MC3836-3 | BH24137.D | 1 | 09/26/1I | WS | n/a | n/a | GBH1325 |

The QC reported here applies to the following samples: Mcthod: SW846 8015

MC3883-1, MC3883-2, MC3883-3, MC3883-4, MC3883-5

| CAS No. | Compound | MC3836-3 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 48.6 | 44.4 | 91 | 42.7 | 88 | 4 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3836-3 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 107% | 93% | 95% | 36-148% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4079-11MS | BH24338.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1337 |
| MC4079-11MSD | BH24339.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1337 |
| MC4079-11 | BH24337.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1337 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3883-6, MC3883-7, MC3883-8, MC3883-9

| CAS No. | Compound | MC4079-11 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 51.1 | 66.7 | 131 | 73.9 | 145 | 10 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4079-11 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 88% | 85% | 86% | 36-148% |

# Volatile Surrogate Recovery Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3883-1 | BH24150.D | 102.0 |
| MC3883-2 | BH24149.D | 102.0 |
| MC3883-3 | BH24148.D | 98.0 |
| MC3883-4 | BH24147.D | 115.0 |
| MC3883-5 | BH24151.D | 105.0 |
| MC3883-6 | BH24351.D | 92.0 |
| MC3883-7 | BH24352.D | 96.0 |
| MC3883-8 | BH24350.D | 96.0 |
| MC3883-9 | BH24349.D | 103.0 |
| GBH1325-BSP | BH24127.D | 96.0 |
| GBH1325-MB | BH24126.D | 85.0 |
| GBH1337-BSP | BH24331.D | 87.0 |
| GBH1337-MB | BH24330.D | 88.0 |
| MC3836-3MS | BH24138.D | 107.0 |
| MC3836-3MSD | BH24139.D | 93.0 |
| MC4079-11MS | BH24338.D | 88.0 |
| MC4079-11MSD | BH24339.D | 85.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1325-CC1043 | Injection Date: | 09/26/11 |
| Lab File ID: | BH24125.D | Injection Time: | 13:57 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1325-MB | BH24126.D | 09/26/11 | 14:37 | 32.40 |
| GBH1325-BSP | BH24127.D | 09/26/11 | 15:17 | 32.40 |
| ZZZZZZ | BH24128.D | 09/26/11 | 15:57 | 32.39 |
| ZZZZZZ | BH24129.D | 09/26/11 | 16:37 | 32.40 |
| ZZZZZZ | BH24130.D | 09/26/11 | 17:17 | 32.40 |
| ZZZZZZ | BH24131.D | 09/26/11 | 17:57 | 32.39 |
| ZZZZZZ | BH24132.D | 09/26/11 | 18:37 | 32.39 |
| ZZZZZZ | BH24133.D | 09/26/11 | 19:17 | 32.40 |
| ZZZZZZ | BH24134.D | 09/26/11 | 19:58 | 32.40 |
| ZZZZZZ | BH24135.D | 09/26/11 | 20:38 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1325-CC1043 | Injection Date: | 09/26/11 |
| Lab File ID: | BH24136.D | Injection Time: | 21:18 |
| Instrument ID: | GCBH | Method: | SW846 8015 |



| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3836-3 | BH24137.D | 09/26/11 | 21:58 | 32.39 |
| MC3836-3MS | BH24138.D | 09/26/11 | 22:38 | 32.39 |
| MC3836-3MSD | BH24139.D | 09/26/11 | 23:18 | 32.39 |
| ZZZZZZ | BH24140.D | 09/26/11 | 23:58 | 32.39 |
| ZZZZZZ | BH24141.D | 09/27/11 | 00:38 | 32.40 |
| ZZZZZZ | BH24142.D | 09/27/11 | 01:18 | 32.39 |
| ZZZZZZ | BH24143.D | 09/27/11 | 01:57 | 32.39 |
| ZZZZZZ | BH24144.D | 09/27/11 | 02:37 | 32.39 |
| ZZZZZZ | BH24145.D | 09/27/11 | 03:17 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1325-CC1043 | Injection Date: | 09/27/11 |
| Lab File ID: | BH24146.D | Injection Time: | 03:57 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3883-4 | BH24147.D | 09/27/11 | 04:37 | 32.40 |
| MC3883-3 | BH24148.D | 09/27/11 | 05:17 | 32.39 |
| MC3883-2 | BH24149.D | 09/27/11 | 05:57 | 32.39 |
| MC3883-1 | BH24150.D | 09/27/11 | 06:36 | 32.40 |
| MC3883-5 | BH24151.D | 09/27/11 | 07:16 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1337-CC1043 | Injection Date: | 10/04/11 |
| Lab File ID: | BH24329.D | Injection Time: | 12:45 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1337-MB | BH24330.D | 10/04/11 | 13:25 | 32.40 |
| GBH1336-MB | BH24330A.D | 10/04/11 | 13:25 | 32.40 |
| GBH1337-BSP | BH24331.D | 10/04/11 | 14:05 | 32.40 |
| GBH1336-BSP | BH24331A.D | 10/04/11 | 14:05 | 32.40 |
| MC3835-5 | BH24332.D | 10/04/11 | 14:45 | 32.40 |
| MC3835-5MS | BH24333.D | 10/04/11 | 15:24 | 32.40 |
| MC3835-5MSD | BH24334.D | 10/04/11 | 16:04 | 32.40 |
| ZZZZZZ | BH24335.D | 10/04/11 | 16:44 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1336-CC1043 | Injection Date: | 10/04/11 |
| Lab File ID: | BH24329A.D | Injection Time: | 12:45 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1337-MB | BH24330.D | 10/04/11 | 13:25 | 32.40 |
| GBH1336-MB | BH24330A.D | 10/04/11 | 13:25 | 32.40 |
| GBH1337-BSP | BH24331.D | 10/04/11 | 14:05 | 32.40 |
| GBH1336-BSP | BH24331A.D | 10/04/11 | 14:05 | 32.40 |
| MC3835-5 | BH24332.D | 10/04/11 | 14:45 | 32.40 |
| MC3835-5MS | BH24333.D | 10/04/11 | 15:24 | 32.40 |
| MC3835-5MSD | BH24334.D | 10/04/11 | 16:04 | 32.40 |
| ZZZZZZ | BH24335.D | 10/04/11 | 16:44 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1337-CC1043 | Injection Date: | 10/04/11 |
| Lab File ID: | BH24336.D | Injection Time: | 17:24 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC4079-11 | BH24337.D | 10/04/11 | 18:04 | 32.40 |
| MC4079-11MS | BH24338.D | 10/04/11 | 18:43 | 32.40 |
| MC4079-11MSD | BH24339.D | 10/04/11 | 19:23 | 32.40 |
| ZZZZZZ | BH24340.D | 10/04/11 | 20:03 | 32.39 |
| ZZZZZZ | BH24341.D | 10/04/11 | 20:43 | 32.40 |
| ZZZZZZ | BH24342.D | 10/04/11 | 21:22 | 32.40 |
| ZZZZZZ | BH24343.D | 10/04/11 | 22:02 | 32.40 |
| ZZZZZZ | BH24344.D | 10/04/11 | 22:42 | 32.40 |
| ZZZZZZ | BH24345.D | 10/04/11 | 23:21 | 32.40 |
| ZZZZZZ | BH24346.D | 10/05/11 | 00:01 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1336-CC1043 | Injection Date: | 10/04/11 |
| Lab File ID: | BH24336A.D | Injection Time: | 17:24 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC4079-11 | BH24337.D | 10/04/11 | 18:04 | 32.40 |
| MC4079-11MS | BH24338.D | 10/04/11 | 18:43 | 32.40 |
| MC4079-11MSD | BH24339.D | 10/04/11 | 19:23 | 32.40 |
| ZZZZZZ | BH24340.D | 10/04/11 | 20:03 | 32.39 |
| ZZZZZZ | BH24341.D | 10/04/11 | 20:43 | 32.40 |
| ZZZZZZ | BH24342.D | 10/04/11 | 21:22 | 32.40 |
| ZZZZZZ | BH24343.D | 10/04/11 | 22:02 | 32.40 |
| ZZZZZZ | BH24344.D | 10/04/11 | 22:42 | 32.40 |
| ZZZZZZ | BH24345.D | 10/04/11 | 23:21 | 32.40 |
| ZZZZZZ | BH24346.D | 10/05/11 | 00:01 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1337-CC1043 | Injection Date: | 10/05/11 |
| Lab File ID: | BH24347.D | Injection Time: | 00:41 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BH24348.D | 10/05/11 | 01:20 | 32.39 |
| MC3883-9 | BH24349.D | 10/05/11 | 02:00 | 32.40 |
| MC3883-8 | BH24350.D | 10/05/11 | 02:39 | 32.40 |
| MC3883-6 | BH24351.D | 10/05/11 | 03:19 | 32.40 |
| MC3883-7 | BH24352.D | 10/05/11 | 03:59 | 32.40 |
| ZZZZZZ | BH24353.D | 10/05/11 | 04:38 | 32.40 |
| ZZZZZZ | BH24354.D | 10/05/11 | 05:18 | 32.40 |
| ZZZZZZ | BH24355.D | 10/05/11 | 05:57 | 32.40 |
| ZZZZZZ | BH24356.D | 10/05/11 | 06:37 | 32.40 |
| ZZZZZZ | BH24357.D | 10/05/11 | 07:16 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

New England ACCUTEST LABORATORIES

# GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26402-MB | BG31482.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1128 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3883-1, MC3883-2, MC3883-3, MC3883-4, MC3883-5, MC3883-6, MC3883-7, MC3883-8, MC3883-9

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 16 | 12 | mg/kg | |
| | TPH (> C28-C40) | ND | 16 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 93% | 24-147% |

7.1.1

7

# Blank Spike Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26402-BS | BG31484.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1128 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3883-1, MC3883-2, MC3883-3, MC3883-4, MC3883-5, MC3883-6, MC3883-7, MC3883-8, MC3883-9

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 164 | 157 | 96 | 63-139 |
| | TPH (>C28-C40) | 164 | 120 | 73 | 46-103 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 94% | 24-147% |

7.2.1

7

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26402-MS | BG31495.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1129 |
| OP26402-MSD | BG31497.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1129 |
| MC3921-2 | BG31499.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1129 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3883-1, MC3883-2, MC3883-3, MC3883-4, MC3883-5, MC3883-6, MC3883-7, MC3883-8, MC3883-9

7.3.1

7

| CAS No. | Compound | MC3921-2 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 185 | 133 | 72 | 207 | 109 | 44 | 8-154/127 |
| | TPH (> C28-C40) | ND | | 185 | 97.3 | 53 | 153 | 80 | 45* [a] | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3921-2 | Limits |
|---|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 75% | 0%* [b] | 110% | 24-147% |

(a) Outside control limits due to possible matrix interference.
(b) Surrogate standard not added.Range recovery satisfactory.

# Semivolatile Surrogate Recovery Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3883-1 | BG31503.D | 95.0 |
| MC3883-2 | BG31501.D | 105.0 |
| MC3883-3 | BG31494.D | 78.0 |
| MC3883-4 | BG31519.D | 109.0 |
| MC3883-4 | BG31509.D | 104.0 |
| MC3883-5 | BG31488.D | 92.0 |
| MC3883-6 | BG31517.D | 96.0 |
| MC3883-6 | BG31505.D | 98.0 |
| MC3883-7 | BG31490.D | 87.0 |
| MC3883-8 | BG31492.D | 86.0 |
| MC3883-9 | BG31521.D | 96.0 |
| MC3883-9 | BG31511.D | 88.0 |
| OP26402-BS | BG31484.D | 94.0 |
| OP26402-MB | BG31482.D | 93.0 |
| OP26402-MS | BG31495.D | 75.0 |
| OP26402-MSD | BG31497.D | 0.0* [b] |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 1-Chlorooctadecane | 24-147% |

(a) Recovery from GC signal #1
(b) Surrogate standard not added.Range recovery satisfactory.

# GC Surrogate Retention Time Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1128-CC1125 | Injection Date: | 10/06/11 |
| Lab File ID: | BG31480.D | Injection Time: | 13:43 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 16.31 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26402-MB | BG31482.D | 10/06/11 | 15:03 | 16.32 |
| OP26402-BS | BG31484.D | 10/06/11 | 15:49 | 16.33 |
| ZZZZZZ | BG31486.D | 10/06/11 | 16:35 | 16.32 |
| MC3883-5 | BG31488.D | 10/06/11 | 17:22 | 16.32 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.1

7

# GC Surrogate Retention Time Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1129-ICC1129 | Injection Date: | 10/06/11 |
| Lab File ID: | BG31489.D | Injection Time: | 17:22 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 15.61 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3883-7 | BG31490.D | 10/06/11 | 18:09 | 16.32 |
| MC3883-8 | BG31492.D | 10/06/11 | 18:56 | 16.32 |
| MC3883-3 | BG31494.D | 10/06/11 | 19:43 | 16.32 |
| OP26402-MS | BG31495.D | 10/06/11 | 19:43 | 15.61 |
| ZZZZZZ | BG31496.D | 10/06/11 | 20:30 | 16.32 |
| OP26402-MSD | BG31497.D | 10/06/11 | 20:30 | 15.67 |
| ZZZZZZ | BG31498.D | 10/06/11 | 21:17 | 16.35 |
| MC3921-2 | BG31499.D | 10/06/11 | 21:17 | 15.62 |
| ZZZZZZ | BG31500.D | 10/06/11 | 22:03 | 16.32 |
| MC3883-2 | BG31501.D | 10/06/11 | 22:03 | 15.62 |
| GBG1128-ECC112 | BG31502.D | 10/06/11 | 22:50 | 16.31 |
| GBG1129-ECC112 | BG31513.D | 10/07/11 | 02:43 | 15.61 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.2

7

# GC Surrogate Retention Time Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1130-CC1129 | Injection Date: | 10/07/11 |
| Lab File ID: | BG31515.D | Injection Time: | 08:59 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 15.60 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3883-6 | BG31517.D | 10/07/11 | 10:04 | 15.59 |
| MC3883-4 | BG31519.D | 10/07/11 | 11:19 | 15.60 |
| MC3883-9 | BG31521.D | 10/07/11 | 12:06 | 15.60 |
| ZZZZZZ | BG31523.D | 10/07/11 | 13:02 | 15.60 |
| GBG1130-ECC112 | BG31525.D | 10/07/11 | 13:49 | 15.61 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.3

7

New England ACCUTEST LABORATORIES

## General Chemistry

## QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC3883-1 Analyzed: 26-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE20 (25-27.5)092211

| | | |
|---|---|---|
| Wet Weight (Total) | 28.662 | g |
| Tare Weight | 21.063 | g |
| Dry Weight (Total) | 28.289 | g |
| Solids, Percent | 95.1 | % |

Sample: MC3883-2 Analyzed: 26-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE13 (17.5-20)092211

| | | |
|---|---|---|
| Wet Weight (Total) | 24.857 | g |
| Tare Weight | 17.454 | g |
| Dry Weight (Total) | 24.503 | g |
| Solids, Percent | 95.2 | % |

Sample: MC3883-3 Analyzed: 26-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE10 (17.5-20)092211

| | | |
|---|---|---|
| Wet Weight (Total) | 24.032 | g |
| Tare Weight | 16.279 | g |
| Dry Weight (Total) | 23.724 | g |
| Solids, Percent | 96 | % |

Sample: MC3883-4 Analyzed: 26-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP36 (10-11)092211

| | | |
|---|---|---|
| Wet Weight (Total) | 30.86 | g |
| Tare Weight | 22.093 | g |
| Dry Weight (Total) | 29.368 | g |
| Solids, Percent | 83 | % |

Sample: MC3883-5 Analyzed: 26-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE33 (27.5-30)092211

| | | |
|---|---|---|
| Wet Weight (Total) | 37.485 | g |
| Tare Weight | 27.963 | g |
| Dry Weight (Total) | 37.144 | g |
| Solids, Percent | 96.4 | % |

Sample: MC3883-6 Analyzed: 26-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE11 (12.5-15)092211

| | | |
|---|---|---|
| Wet Weight (Total) | 32.092 | g |
| Tare Weight | 25.846 | g |
| Dry Weight (Total) | 31.607 | g |
| Solids, Percent | 92.2 | % |

# Percent Solids Raw Data Summary



Job Number: MC3883
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC3883-7 Analyzed: 26-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE32 (25-27.5)092211

| | | |
|---|---|---|
| Wet Weight (Total) | 38.546 | g |
| Tare Weight | 30.747 | g |
| Dry Weight (Total) | 38.1 | g |
| Solids, Percent | 94.3 | % |

Sample: MC3883-8 Analyzed: 26-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE10 (17.5-20)092211 DUP

| | | |
|---|---|---|
| Wet Weight (Total) | 24.863 | g |
| Tare Weight | 16.957 | g |
| Dry Weight (Total) | 24.521 | g |
| Solids, Percent | 95.7 | % |

Sample: MC3883-9 Analyzed: 26-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: SVE12 (15-17.5)092211

| | | |
|---|---|---|
| Wet Weight (Total) | 25.671 | g |
| Tare Weight | 15.609 | g |
| Dry Weight (Total) | 24.277 | g |
| Solids, Percent | 86.1 | % |

8.1
8

# SVE Install 2011 Data Review

**Laboratory SDG: MC3921**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 1/12/2012**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| SVE-34 (32-34) 092311 | VMP-46 (10-11) 092311 |
| SVE-34 (44-45) 092311 EB | TB-092311 |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes; however, the filed duplicate pair of VMP-46 (10-11) 092311/VMP-46 (10-11) 092311 Dup was separated into two SDGs, SDGs MC3921 and SDG MC3922.

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS/LCSD recoveries were outside evaluation criteria. Surrogate recoveries for sample VMP-46 (10-11) 092311 and surrogate recoveries for two quality control samples were outside evaluation criteria. VOC MS/MSD recoveries and TPH-ORO MS/MSD RPDs were outside of evaluation criteria in sample VMP-46 (10-11) 092311. Internal standard area recoveries in the initial analysis of sample VMP-46 (10-11) 092311 were outside evaluation criteria. Professional judgment was used to qualify acetone in sample VMP-46 (10-11) 092311. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 1.9°C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSK1842-BS | VOCs | Isopropylbenzene | **138** | NA | 70-130 |
| MSK1842-BS | VOCs | Vinyl chloride | **60** | NA | 70-130 |
| MSP1816-BS | VOCs | Acetone | **133** | NA | 70-130 |
| MSP1816-BS | VOCs | Acrolein | **284** | NA | 70-130 |
| MSM1417-BS/BSD | VOCs | Acetone | **137/149** | 8 | 70-130/25 |
| MSM1417-BS/BSD | VOCs | Acrolein | **137/132** | 4 | 70-130/25 |
| MSM1417-BS/BSD | VOCs | Acrylonitrile | **368/360** | 2 | 70-130/25 |
| MSM1417-BS/BSD | VOCs | 2-Chloroethyl vinyl ether | **32/34** | 8 | 70-130/25 |
| MSM1417-BS/BSD | VOCs | 1,4-Dioxane | **54/66** | 20 | 70-130/25 |
| MSM1417-BS/BSD | VOCs | Hexachlorobutadiene | **144/147** | 2 | 70-130/25 |
| MSM1417-BS/BSD | VOCs | 2-Hexanone | 124/**132** | 6 | 70-130/25 |
| MSM1417-BS/BSD | VOCs | 1,1,2,2-Tetrachloroethane | 71/**67** | 5 | 70-130/25 |
| MSM1417-BS/BSD | VOCs | Vinyl acetate | **22/18** | 17 | 70-130/25 |

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS MSM1417-BS/BSD was associated with equipment blank SVE-34 (44-45) 092311 EB and trip blank TB-092311. Equipment and trip blanks are quality control samples and are not qualified.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| SVE-34 (32-34) 092311 | VOCs | Isopropylbenzene | **J** |
| SVE-34 (32-34) 092311 | VOCs | Vinyl chloride | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

No

| Sample ID | Parameter | Surrogate | Recovery | Criteria |
|---|---|---|---|---|
| VMP-46 (10-11) 092311 Run #1 | VOCs | Toluene-$d_8$ | **144** | 70-130 |
| VMP-46 (10-11) 092311 Run #2 | VOCs | Toluene-$d_8$ | **148** | 70-130 |
| VMP-46 (10-11) 092311 Run #1 | VOCs | 4-Bromofluorobenzene | **150** | 70-130 |
| VMP-46 (10-11) 092311 Run #2 | VOCs | 4-Bromofluorobenzene | **144** | 70-130 |

| Sample ID | Parameter | Surrogate | Recovery | Criteria |
|---|---|---|---|---|
| MC3921-2MS/MSD | VOCs | Toluene-$d_8$ | **144** | 70-130 |
| MC3921-2MS/MSD | VOCs | 4-Bromofluorobenzene | **150** | 70-130 |
| OP26402-MS/MSD | VOCs | 1-Chlorooctadecane | **0** | 24-147 |

Analytical data that required qualification based on surrogate data are in included in the table below. Analytical data reported as non-detect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. Samples MC3921-2MS/MSD and OP26402-MS/MSD are quality control samples and are not qualified.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| VMP-46 (10-11) 092311 | VOCs | Benzene | **J** |
| VMP-46 (10-11) 092311 | VOCs | Ethylbenzene | **J** |
| VMP-46 (10-11) 092311 | VOCs | Isopropylbenzene | **J** |
| VMP-46 (10-11) 092311 | VOCs | n-Propylbenzene | **J** |
| VMP-46 (10-11) 092311 | VOCs | Toluene | **J** |
| VMP-46 (10-11) 092311 | VOCs | 1,2,4-Trimethylbnzene | **J** |
| VMP-46 (10-11) 092311 | VOCs | 1,3,5-Trimethylbenzene | **J** |
| VMP-46 (10-11) 092311 | VOCs | m,p-Xylene | **J** |
| VMP-46 (10-11) 092311 | VOCs | o-Xylene | **J** |
| VMP-46 (10-11) 092311 | VOCs | Xylene (total) | **J** |

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, sample VMP-46 (10-11) 092311 was spiked and analyzed for VOCs and TPH-GRO/DRO/ORO.

*Were MS/MSD recoveries within evaluation criteria?*

No

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/RPD Criteria |
|---|---|---|---|---|---|
| VMP-46 (10-11) 092311 | VOCs | Acetone | **-139/-116** | 15 | 70-130/30 |
| VMP-46 (10-11) 092311 | VOCs | Acrolein | **533/605** | 11 | 70-130/30 |
| VMP-46 (10-11) 092311 | VOCs | Acrylonitrile | **146/167** | 12 | 70-130/30 |
| VMP-46 (10-11) 092311 | VOCs | 2-Butanone (MEK) | 120/**146** | 18 | 70-130/30 |
| VMP-46 (10-11) 092311 | VOCs | Carbon disulfide | 128/**131** | 1 | 70-130/30 |
| VMP-46 (10-11) 092311 | VOCs | 1,2-Dibromo-3-chloropropane | 127/**152** | 16 | 70-130/30 |
| VMP-46 (10-11) 092311 | VOCs | Dichlorodifluoromethane | **144/144** | 1 | 70-130/30 |
| VMP-46 (10-11) 092311 | VOCs | 1,1-Dichloroethene | 129/**135** | 4 | 70-130/30 |

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/RPD Criteria |
|---|---|---|---|---|---|
| VMP-46 (10-11) 092311 | VOCs | 1,4-Dioxane | **131/176** | 28 | 70-130/30 |
| VMP-46 (10-11) 092311 | VOCs | 2-Hexanone | 126/**137** | 7 | 70-130/30 |
| VMP-46 (10-11) 092311 | VOCs | Isopropylbenzene | 126/**133** | 4 | 70-130/30 |
| VMP-46 (10-11) 092311 | VOCs | 4-Methyl-2-pentanone (MIBK) | 123/**148** | 17 | 70-130/30 |
| VMP-46 (10-11) 092311 | VOCs | 1,1,2,2-Tetrachloroethane | 129/**142** | 9 | 70-130/30 |
| VMP-46 (10-11) 092311 | VOCs | 1,2,3-Trichloropropane | **136/155** | 12 | 70-130/30 |
| VMP-46 (10-11) 092311 | TPH-DRO-ORO | TPH-ORO | 53/80 | **45** | -39-170/41 |

USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone and LCS recoveries were within evaluation criteria with the exception of compounds listed and qualified as appropriate in Section 5.0 of this data review. No further qualification of the data was required.

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

No

| Sample ID | Parameter | Analyte | IS Area Recovery | IS Criteria |
|---|---|---|---|---|
| VMP-46 (10-11) 092311 | VOCs | 1,4-Dichlorobenzene-$d_5$ | **29064** | 29264-117056 |

The initial run results for sample VMP-46 (10-11) 092311 were outside criteria; however lab data used the second confirmation run results, which were inside criteria. Therefore no qualification of the data was required.

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

Yes, the parent sample of field duplicate pair VMP-46 (10-11) 092311 was collected as part of this SDG. The duplicate sample was collected as part of SDG MC3922; please see section 10.0 of SDG MC3922 for further discussion.

*Were field duplicate RPDs within evaluation criteria?*

Yes

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

Yes, professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations greater than two times (2X) the reporting limit (RL), since acetone is not representative of site conditions. Additionally, USEPA Method 5035A states that acidification of certain soils with sodium bisulfate may produce a false positive acetone artifact of 100-200 ppb, or more. Acetone reported at concentrations less than 200 ppb (ug/kg) were qualified.

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| VMP-46 (10-11) 092311 | Acetone | 179 ug/kg | **U** | Professional Judgment |

New England ACCUTEST LABORATORIES

11/23/11

Technical Report for

Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC3921

Sampling Date: 09/23/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **104**

Renewed 1/12/12

Reza Pand
Lab Director

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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# Sample Summary

Shell Oil

Job No: MC3921

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| MC3921-1 | 09/23/11 | 09:45 | LRSW | 09/24/11 | SO | Soil | SVE 34 (32-34) 092311 |
| MC3921-2 | 09/23/11 | 10:05 | LRSW | 09/24/11 | SO | Soil | VMP 46 (10-11) 092311 |
| MC3921-2D | 09/23/11 | 10:05 | LRSW | 09/24/11 | SO | Soil Dup/MSD | VMP 46 (10-11) 092311 |
| MC3921-2S | 09/23/11 | 10:05 | LRSW | 09/24/11 | SO | Soil Matrix Spike | VMP 46 (10-11) 092311 |
| MC3921-3 | 09/23/11 | 11:10 | LRSW | 09/24/11 | AQ | Equipment Blank | SVE 34 (44-45) 092311EB |
| MC3921-4 | 09/23/11 | 16:00 | LRSW | 09/24/11 | AQ | Trip Blank Water | TB092311 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC3921 |
| **Site:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Ra | **Report Date** | 10/11/2011 3:51:28 PM |

3 Sample(s), 1 Trip Blank were collected on 09/23/2011 and were received at Accutest on 09/24/2011 properly preserved, at 1.9 Deg. C and intact. These Samples received an Accutest job number of MC3921. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSM1417

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3904-15MS, MC3904-15MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for 1,4-Dioxane, 2-Chloroethyl vinyl ether, Acetone, Acrolein, Hexachlorobutadiene, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 2-Chloroethyl vinyl ether, Acrolein, Hexachlorobutadiene, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2-Chloroethyl vinyl ether, Acrolein, Acrylonitrile, Carbon tetrachloride, Hexachlorobutadiene, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSM1417-BS /MC3904-15MS/MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.
- Blank Spike Duplicate Recovery(s) for 1,4-Dioxane, 2-Chloroethyl vinyl ether, Acetone, Acrolein, 2-Hexanone, 1,1,2,2-Tetrachloroethane, Hexachlorobutadiene, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.

**Matrix** SO **Batch ID:** MSK1842

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC4011-6MS, MC4011-6MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Isopropylbenzene, Vinyl chloride are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for Bromomethane, Chloromethane, Dichlorodifluoromethane, Vinyl chloride are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for Bromomethane, Chloromethane, Dichlorodifluoromethane, Vinyl Acetate, Vinyl chloride are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

**Matrix** SO **Batch ID:** MSP1816

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3921-2MS, MC3921-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Acetone are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Acetone are outside control limits. Outside control limits due to high level in sample relative to spike amount.

## Volatiles by GCMS By Method SW846 8260B

| Matrix SO | Batch ID: MSP1816 |
|---|---|

- Matrix Spike Duplicate Recovery(s) for 1,1,2,2-Tetrachloroethane, 1,1-Dichloroethene, 1,2,3-Trichloropropane, 1,2-Dibromo-3-chloropropane, 1,4-Dioxane, 2-Butanone (MEK), 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Dichlorodifluoromethane, Isopropylbenzene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MS/MSD Recovery(s) for Acrolein, Acrylonitrile are outside control limits. Associated samples are non-detect for this compound.
- MSP1816-BS for Acrolein: Outside control limits. Associated samples are non-detect for this compound.
- MC3921-2 for Toluene-D8, 4-Bromofluorobenzene: Outside control limits due to possible matrix interference. Confirmed by reanalysis.
- MC3921-2MS for 1,2,3-Trichloropropane, 1,4-Dioxane, Dichlorodifluoromethane is outside control limits due to possible matrix interference. Refer to Blank Spike.
- MC3921-2 has internal standard outside control limits. Outside control limits due to possible matrix interference. Confirmed by reanalysis.

| Matrix SO | Batch ID: MSP1817 |
|---|---|

- MC3921-2: Confirmation run for surrogate recoveries.

## Volatiles by GC By Method SW846 8015

| Matrix AQ | Batch ID: GBH1338 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC4127-1MS, MC4127-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

| Matrix SO | Batch ID: GBH1337 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC4079-11MS, MC4079-11MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Calibration standard GBH1336-CC1043 utilized the same files as GBH1337-CC1043.

| Matrix SO | Batch ID: GBH1339 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3921-2MS, MC3921-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Extractables by GC By Method SW846-8015

| Matrix AQ | Batch ID: OP26420 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC4057-2MS, MC4057-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

| Matrix SO | Batch ID: OP26402 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3921-2MS, MC3921-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- RPD(s) for MSD for TPH (>C28-C40) are outside control limits for sample OP26402-MSD. Outside control limits due to possible matrix interference.
- OP26402-MSD for 1-Chlorooctadecane: Surrogate standard not added.Range recovery satisfactory.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN36317 |
|---|---|

- Sample(s) MC3921-2DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC3921).

New England ACCUTEST LABORATORIES

## Sample Results

Report of Analysis

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE 34 (32-34) 092311 | | |
| Lab Sample ID: | MC3921-1 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | 97.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55140.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.30 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 600 | 140 | ug/kg | |
| 107-02-8 | Acrolein | ND | 3000 | 2000 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 600 | 240 | ug/kg | |
| 71-43-2 | Benzene | 1910 | 60 | 15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 600 | 23 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 600 | 120 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 240 | 25 | ug/kg | |
| 75-25-2 | Bromoform | ND | 240 | 57 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 240 | 81 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 600 | 140 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 2620 | 600 | 150 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 819 | 600 | 20 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 600 | 78 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 600 | 120 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 240 | 27 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 240 | 11 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 600 | 31 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 600 | 600 | ug/kg | |
| 67-66-3 | Chloroform | ND | 240 | 18 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 600 | 26 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 600 | 17 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 600 | 130 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 600 | 600 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 240 | 78 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 240 | 23 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 240 | 18 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 240 | 17 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 240 | 17 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 240 | 41 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 240 | 18 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 240 | 17 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 240 | 38 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.1

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE 34 (32-34) 092311 | | |
| Lab Sample ID: | MC3921-1 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | 97.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 240 | 33 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 240 | 30 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 240 | 27 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 600 | 140 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 600 | 22 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 600 | 23 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 240 | 120 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 240 | 82 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 3000 | 3000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 600 | 370 | ug/kg | |
| 100-41-4 | Ethylbenzene | 17600 | 240 | 16 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 600 | 600 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 600 | 130 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 2230 | 600 | 19 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 975 | 600 | 19 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 240 | 74 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 600 | 100 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 600 | 37 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 240 | 43 | ug/kg | |
| 91-20-3 | Naphthalene | 5030 | 600 | 600 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 3910 | 600 | 19 | ug/kg | |
| 100-42-5 | Styrene | ND | 600 | 60 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 600 | 120 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 240 | 21 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 240 | 20 | ug/kg | |
| 108-88-3 | Toluene | 2030 | 600 | 22 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 600 | 130 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 600 | 600 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 240 | 22 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 240 | 31 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 240 | 23 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 240 | 110 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 600 | 25 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 18500 | 600 | 19 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 5630 | 600 | 22 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 600 | 140 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 240 | 77 | ug/kg | UJ |
| | m,p-Xylene | 38400 | 240 | 30 | ug/kg | |
| 95-47-6 | o-Xylene | 4450 | 240 | 22 | ug/kg | |
| 1330-20-7 | Xylene (total) | 42900 | 240 | 15 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE 34 (32-34) 092311 | | |
| Lab Sample ID: | MC3921-1 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | 97.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 104% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 119% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE 34 (32-34) 092311 | | |
| Lab Sample ID: | MC3921-1 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8015 | Percent Solids: | 97.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24348.D | 1 | 10/05/11 | WS | n/a | n/a | GBHI337 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.02 g | 10.0 ml | 50.0 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 692 | 26 | 4.9 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 101% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE 34 (32-34) 092311 | | |
| Lab Sample ID: | MC3921-1 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 97.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31498.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1128 |
| Run #2 | BG31523.D | 5 | 10/07/11 | KD | 09/27/11 | OP26402 | GBG1130 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.5 g | 1.0 ml |
| Run #2 | 15.5 g | 1.0 ml |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 2150 [a] | 82 | 62 | mg/kg | |
| | TPH (> C28-C40) | 34.1 | 16 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 91% | 98% | 24-147% |

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP 46 (10-11) 092311 | | |
| Lab Sample ID: | MC3921-2 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | 86.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P55476.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| Run #2 [a] | P55505.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.47 g | 5.0 ml |
| Run #2 | 4.44 g | 5.0 ml |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~179~~ U | ~~6.5~~ 179 | 1.5 | ug/kg | |
| 107-02-8 | Acrolein | ND | 32 | 22 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6.5 | 2.6 | ug/kg | |
| 71-43-2 | Benzene | 8.4 J | 0.65 | 0.16 | ug/kg | J |
| 108-86-1 | Bromobenzene | ND | 6.5 | 0.25 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6.5 | 1.3 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.6 | 0.27 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.6 | 0.61 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.6 | 0.87 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 6.5 | 1.5 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 6.5 | 1.6 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 6.5 | 0.21 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 6.5 | 0.85 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 6.5 | 1.3 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.6 | 0.29 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.6 | 0.12 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6.5 | 0.34 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6.5 | 6.5 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.6 | 0.19 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6.5 | 0.28 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 6.5 | 0.18 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6.5 | 1.5 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6.5 | 6.5 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.6 | 0.84 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.6 | 0.25 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.6 | 0.19 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.6 | 0.19 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.6 | 0.18 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.6 | 0.44 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.6 | 0.20 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.6 | 0.19 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.6 | 0.41 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.2

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP 46 (10-11) 092311 | | |
| Lab Sample ID: | MC3921-2 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | 86.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.6 | 0.35 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.6 | 0.33 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.6 | 0.30 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6.5 | 1.5 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6.5 | 0.24 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6.5 | 0.25 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.6 | 1.3 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.6 | 0.89 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 32 | 32 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6.5 | 4.0 | ug/kg | |
| 100-41-4 | Ethylbenzene | 13.4 J | 2.6 | 0.17 | ug/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 6.5 | 6.5 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6.5 | 1.4 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 1.7 J | 6.5 | 0.21 | ug/kg | JJ |
| 99-87-6 | p-Isopropyltoluene | ND | 6.5 | 0.21 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.6 | 0.80 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6.5 | 1.1 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6.5 | 0.40 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.6 | 0.47 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 6.5 | 6.5 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 4.0 J | 6.5 | 0.21 | ug/kg | J |
| 100-42-5 | Styrene | ND | 6.5 | 0.65 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6.5 | 1.3 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.6 | 0.23 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.6 | 0.22 | ug/kg | |
| 108-88-3 | Toluene | 10.0 J | 6.5 | 0.23 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6.5 | 1.4 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6.5 | 6.5 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.6 | 0.24 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.6 | 0.33 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.6 | 0.25 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.6 | 1.2 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6.5 | 0.27 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 3.1 J | 6.5 | 0.20 | ug/kg | JJ |
| 108-67-8 | 1,3,5-Trimethylbenzene | 3.0 J | 6.5 | 0.24 | ug/kg | JJ |
| 108-05-4 | Vinyl Acetate | ND | 6.5 | 1.5 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.6 | 0.83 | ug/kg | |
| | m,p-Xylene | 8.1 J | 2.6 | 0.33 | ug/kg | J |
| 95-47-6 | o-Xylene | 2.8 J | 2.6 | 0.24 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 10.9 J | 2.6 | 0.16 | ug/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.2

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP 46 (10-11) 092311 | | |
| Lab Sample ID: | MC3921-2 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | 86.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 | 170 East Rand Ave. Hartford, IL | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 121% | 127% | 70-130% |
| 2037-26-5 | Toluene-D8 | 144% [b] | 148% [b] | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 150% [b] | 144% [b] | 70-130% |

(a) Confirmation run for surrogate recoveries.
(b) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP 46 (10-11) 092311 | | |
| Lab Sample ID: | MC3921-2 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8015 | Percent Solids: | 86.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24373.D | 1 | 10/05/11 | WS | n/a | n/a | GBH1339 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.38 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 14 | 2.7 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 85% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP 46 (10-11) 092311 | | |
| Lab Sample ID: | MC3921-2 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 86.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31499.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1129 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.4 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 19 | 14 | mg/kg | |
| | TPH (>C28-C40) | ND | 19 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 110% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE 34 (44-45) 092311EB | | |
| Lab Sample ID: | MC3921-3 | Date Sampled: | 09/23/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M43833.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE 34 (44-45) 092311EB | | |
| Lab Sample ID: | MC3921-3 | Date Sampled: | 09/23/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE 34 (44-45) 092311EB | | |
| Lab Sample ID: | MC3921-3 | Date Sampled: | 09/23/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 90% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 91% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE 34 (44-45) 092311EB | | |
| Lab Sample ID: | MC3921-3 | Date Sampled: | 09/23/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/24/11 |
| Method: | SW846 8015 | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24368.D | 1 | 10/05/11 | WS | n/a | n/a | GBH1338 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 0.10 | 0.070 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 85% | | 60-126% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE 34 (44-45) 092311EB | | |
| Lab Sample ID: | MC3921-3 | Date Sampled: | 09/23/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/24/11 |
| Method: | SW846-8015 SW846 3510C | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31418.D | 1 | 10/05/11 | KD | 09/28/11 | OP26420 | GBG1125 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 1000 ml | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 0.20 | 0.14 | mg/l | |
| | TPH (>C28-C40) | ND | 0.20 | 0.14 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 56% | | 33-150% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | TB092311 | | |
| Lab Sample ID: | MC3921-4 | Date Sampled: | 09/23/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M43832.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB092311 | | |
| Lab Sample ID: | MC3921-4 | Date Sampled: | 09/23/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.4

| | | | |
|---|---|---|---|
| Client Sample ID: | TB092311 | | |
| Lab Sample ID: | MC3921-4 | Date Sampled: | 09/23/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 | 170 East Rand Ave. Hartford, IL | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 89% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 91% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES

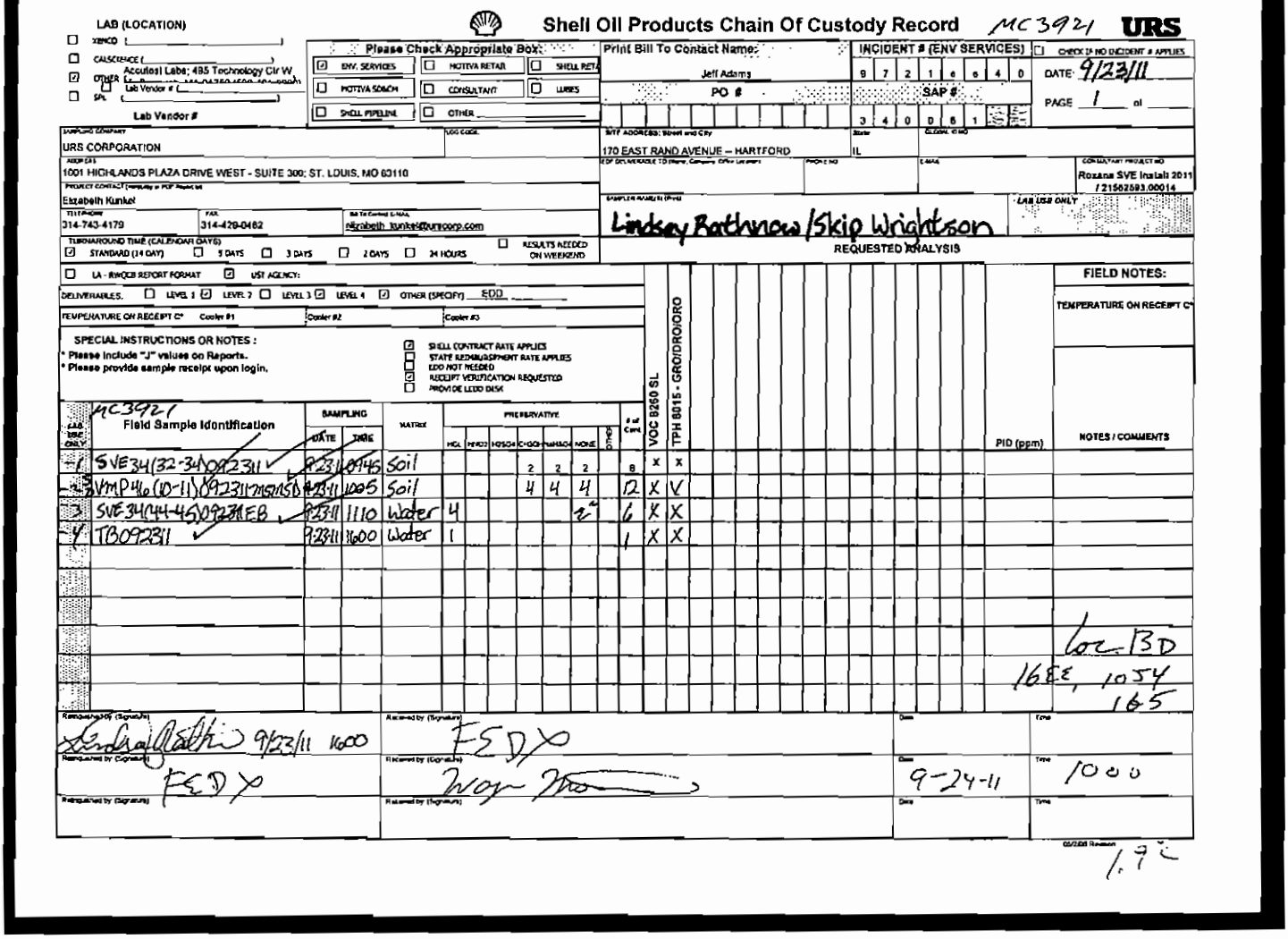


## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



# Shell Oil Products Chain Of Custody Record

MC3921 URS

LAB (LOCATION)
- ☐ XENCO ( )
- ☐ CALSCIENCE ( )
- ☑ OTHER Accutest Labs; 495 Technology Ctr W
- ☐ Lab Vendor # ( )
- ☐ SPL ( )

Lab Vendor #

Please Check Appropriate Box:
- ☑ ENV. SERVICES
- ☐ MOTIVA RETAIL
- ☐ SHELL RETAIL
- ☐ MOTIVA SOUCH
- ☐ CONSULTANT
- ☐ LUBES
- ☐ SHELL PIPELINE
- ☐ OTHER

Print Bill To Contact Name: Jeff Adams

PO #

INCIDENT # (ENV SERVICES): 9 7 2 1 6 6 4 0

SAP #: 3 4 0 0 6 1

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 9/23/11

PAGE 1 of

SAMPLING COMPANY: URS CORPORATION

LOG CODE:

SITE ADDRESS: Street and City: 170 EAST RAND AVENUE – HARTFORD

State: IL

GLOBAL ID NO:

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300; ST. LOUIS, MO 63110

EDF DELIVERABLE TO (Name, Company, Office Location):

PHONE NO:

E-MAIL:

CONSULTANT PROJECT NO: Rozana SVE Install 2011 / 21562593.00014

PROJECT CONTACT (Hardcopy or PDF Report to): Elizabeth Kunkel

TELEPHONE: 314-743-4179

FAX: 314-429-0462

Bill To Contact E-MAIL: elizabeth_kunkel@urscorp.com

SAMPLER NAME(S) (Print): Lindsey Rathnow / Skip Wrightson

LAB USE ONLY

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY:

DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C°: Cooler #1 | Cooler #2 | Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
- * Please include "J" values on Reports.
- * Please provide sample receipt upon login.

- ☑ SHELL CONTRACT RATE APPLIES
- ☐ STATE REIMBURSEMENT RATE APPLIES
- ☐ EDD NOT NEEDED
- ☑ RECEIPT VERIFICATION REQUESTED
- ☐ PROVIDE LEDD DISK

REQUESTED ANALYSIS

FIELD NOTES:

TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | MC3921 Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | HCL | HNO3 | H2SO4 | CHOCH | NaHSO4 | NONE | OTHER | # of Cont. | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SVE34(32-34)092311 | 9-23-11 | 0945 | Soil | | | | 2 | 2 | 2 | | 8 | X | X | | |
| 2 | VMP46(10-11)092311MSMSD | 9-23-11 | 1005 | Soil | | | | 4 | 4 | 4 | | 12 | X | X | | |
| 3 | SVE34(44-45)092311EB | 9-23-11 | 1110 | Water | 4 | | | | | 2 | | 6 | X | X | | |
| 4 | TB092311 | 9-23-11 | 1600 | Water | 1 | | | | | | | 1 | X | X | | |

Loc BD
16EE, 1054
165

| Relinquished by (Signature) | Received by (Signature) | Date | Time |
|---|---|---|---|
| Lindsey Rathnow 9/23/11 1600 | FEDX | | |
| FEDX | [signature] | 9-24-11 | 1000 |
| | | | |

05/2/08 Revision 1.9

MC3921: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC3921 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 9/24/2011 Delivery Method: Client Service Action Required at Login: No

Project: HARTFORD No. Coolers: 1 Airbill #'s:

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2. Custody Seals Intact: | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification: | Infared gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservatio | Y | or N | N/A |
|---|---|---|---|
| 1. Trip Blank present / cooler: | ☐ | ☐ | ☑ |
| 2. Trip Blank listed on COC: | ☐ | ☐ | ☑ |
| 3. Samples preserved properly: | ☑ | ☐ | |
| 4. VOCs headspace free: | ☐ | ☐ | ☑ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles: | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree: | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1. Sample recvd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3. Condition of sample: | Intact |

| Sample Integrity - Instructions | Y | or N | N/A |
|---|---|---|---|
| 1. Analysis requested is clear: | ☑ | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ | ☐ | |
| 4. Compositing instructions clear: | ☐ | ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ | ☐ | ☑ |

Comments

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3921

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3921-1 | Collected: 23-SEP-11 09:45 By: LRSW | | Received: 24-SEP-11 By: SAP | | | |
| SVE 34 (32-34) 092311 | | | | | | |
| MC3921-1 | SM21 2540 B MOD. | 28-SEP-11 | BF | | | %SOL |
| MC3921-1 | SW846 8260B | 30-SEP-11 17:59 | GK | | | V8260SL |
| MC3921-1 | SW846 8015 | 05-OCT-11 01:20 | WS | | | V8015GRO |
| MC3921-1 | SW846-8015 | 06-OCT-11 21:17 | KD | 27-SEP-11 | MEW | B8015DROORO |
| MC3921-1 | SW846-8015 | 07-OCT-11 13:02 | KD | 27-SEP-11 | MEW | B8015DROORO |
| MC3921-2 | Collected: 23-SEP-11 10:05 By: LRSW | | Received: 24-SEP-11 By: SAP | | | |
| VMP 46 (10-11) 092311 | | | | | | |
| MC3921-2 | SM21 2540 B MOD. | 28-SEP-11 | BF | | | %SOL |
| MC3921-2 | SW846 8015 | 05-OCT-11 19:46 | WS | | | V8015GRO |
| MC3921-2 | SW846 8260B | 06-OCT-11 12:18 | AMY | | | V8260SL |
| MC3921-2 | SW846-8015 | 06-OCT-11 21:17 | KD | 27-SEP-11 | MEW | B8015DROORO |
| MC3921-2 | SW846 8260B | 07-OCT-11 13:50 | AMY | | | V8260SL |
| MC3921-3 | Collected: 23-SEP-11 11:10 By: LRSW | | Received: 24-SEP-11 By: SAP | | | |
| SVE 34 (44-45) 092311EB | | | | | | |
| MC3921-3 | SW846-8015 | 05-OCT-11 01:11 | KD | 28-SEP-11 | FC | B8015DROORO |
| MC3921-3 | SW846 8015 | 05-OCT-11 16:27 | WS | | | V8015GRO |
| MC3921-3 | SW846 8260B | 07-OCT-11 17:21 | JP | | | V8260SL |
| MC3921-4 | Collected: 23-SEP-11 16:00 By: LRSW | | Received: 24-SEP-11 By: SAP | | | |
| TB092311 | | | | | | |
| MC3921-4 | SW846 8260B | 07-OCT-11 16:52 | JP | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/24/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3921-1.1 | Walk In Ref #9 | Bijan Firowznin | 09/28/11 15:28 | Retrieve from Storage |
| MC3921-1.1 | Bijan Firowznin | Walk In Ref #9 | 09/28/11 16:49 | Return to Storage |
| MC3921-1.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3921-1.3 | VOC Ref #10 | Gary Krasinski | 09/28/11 15:34 | Retrieve from Storage |
| MC3921-1.3 | Gary Krasinski | VOC Ref #10 | 10/03/11 10:06 | Return to Storage |
| MC3921-1.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3921-2.1 | Walk In Ref #9 | Bijan Firowznin | 09/28/11 15:28 | Retrieve from Storage |
| MC3921-2.1 | Bijan Firowznin | Walk In Ref #9 | 09/28/11 16:49 | Return to Storage |
| MC3921-2.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3921-2.6 | VOC Ref #10 | Gary Krasinski | 09/28/11 15:34 | Retrieve from Storage |
| MC3921-2.6 | Gary Krasinski | VOC Ref #10 | 09/29/11 10:59 | Return to Storage |
| MC3921-2.6 | VOC Ref #10 | William Shao | 10/05/11 10:22 | Retrieve from Storage |
| MC3921-2.6 | William Shao | GCBH | 10/05/11 10:22 | Load on Instrument |
| MC3921-2.6 | GCBH | William Shao | 10/05/11 10:22 | Unload from Instrument |
| MC3921-2.6 | William Shao | VOC Ref #10 | 10/05/11 10:22 | Return to Storage |
| MC3921-2.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3921-2.9 | VOC Ref #10 | Amy Min Yang | 10/07/11 10:46 | Retrieve from Storage |
| MC3921-2.9 | Amy Min Yang | GCMSP | 10/07/11 10:47 | Load on Instrument |
| MC3921-2.9 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC3921-2.9 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC3921-2.9 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3921-2.10 | VOC Ref #10 | Amy Min Yang | 10/06/11 11:00 | Retrieve from Storage |
| MC3921-2.10 | Amy Min Yang | GCMSP | 10/06/11 11:00 | Load on Instrument |
| MC3921-2.10 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC3921-2.10 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC3921-2.10 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3921-2.11 | VOC Ref #10 | Amy Min Yang | 10/06/11 11:00 | Retrieve from Storage |
| MC3921-2.11 | Amy Min Yang | GCMSP | 10/06/11 11:00 | Load on Instrument |
| MC3921-2.11 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC3921-2.11 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC3921-2.11 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3921-2.12 | VOC Ref #10 | Amy Min Yang | 10/06/11 11:00 | Retrieve from Storage |
| MC3921-2.12 | Amy Min Yang | GCMSP | 10/06/11 11:00 | Load on Instrument |
| MC3921-2.12 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC3921-2.12 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC3921-2.12 | Scott Parsick | | 11/23/11 13:06 | Disposed |

# Accutest Internal Chain of Custody



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/24/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3921-3.2 | Walk In Ref #22 | Michael Rolo | 09/29/11 00:31 | Retrieve from Storage |
| MC3921-3.2 | Michael Rolo | | 09/29/11 01:05 | Depleted |
| MC3921-3.3 | VOC Ref #1 | William Shao | 10/05/11 10:20 | Retrieve from Storage |
| MC3921-3.3 | William Shao | GCBH | 10/05/11 10:20 | Load on Instrument |
| MC3921-3.3 | GCBH | William Shao | 10/05/11 10:21 | Unload from Instrument |
| MC3921-3.3 | William Shao | VOC Ref #1 | 10/05/11 10:21 | Return to Storage |
| MC3921-3.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3921-3.5 | VOC Ref #1 | Emily Kozlowski | 10/07/11 13:11 | Retrieve from Storage |
| MC3921-3.5 | Emily Kozlowski | GCMSM | 10/07/11 13:11 | Load on Instrument |
| MC3921-3.5 | GCMSM | Dana Tyron | 10/08/11 11:16 | Unload from Instrument |
| MC3921-3.5 | Dana Tyron | VOC Ref #1 | 10/08/11 11:17 | Return to Storage |
| MC3921-3.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3921-4.1 | VOC Ref #1 | Emily Kozlowski | 10/07/11 13:11 | Retrieve from Storage |
| MC3921-4.1 | Emily Kozlowski | GCMSM | 10/07/11 13:11 | Load on Instrument |
| MC3921-4.1 | GCMSM | Dana Tyron | 10/08/11 11:16 | Unload from Instrument |
| MC3921-4.1 | Dana Tyron | VOC Ref #1 | 10/08/11 11:17 | Return to Storage |
| MC3921-4.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |

New England ACCUTEST LABORATORIES



## GC/MS Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1842-MB | K55127.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 58 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 850 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 250 | 100 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 6.3 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 9.5 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 52 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 10 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 24 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 34 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 59 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 63 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 8.3 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 33 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 48 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 11 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 4.7 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 13 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 250 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 7.4 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 11 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 7.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 56 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 250 | 250 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 33 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 100 | 9.6 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 7.5 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 7.2 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 7.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 17 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 7.6 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 7.3 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 16 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 13 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 11 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 58 | ug/kg | |

# Method Blank Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1842-MB | K55127.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 9.2 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 9.6 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 50 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 34 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 160 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 6.5 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 250 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 52 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 7.9 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.1 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 31 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 42 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 15 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 18 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 250 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 8.1 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 25 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 8.8 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 8.4 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 9.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 55 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 250 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 9.2 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 13 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 9.8 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 46 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 10 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 7.9 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 9.1 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 59 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 32 | ug/kg | |
| | m,p-Xylene | ND | 100 | 13 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 9.2 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 6.3 | ug/kg | |

# Method Blank Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1842-MB | K55127.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-1

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 104% | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 109% | 70-130% |

# Method Blank Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-MB | P55474.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-MB | P55474.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-MB | P55474.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-2

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 83% | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 111% | 70-130% |

# Method Blank Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1417-MB | M43820.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-3, MC3921-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |

# Method Blank Summary

Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1417-MB | M43820.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-3, MC3921-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

# Method Blank Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1417-MB | M43820.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-3, MC3921-4

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 86% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 91% | 70-130% |

# Blank Spike Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1842-BS | K55124.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-1

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 2610 | 104 | 70-130 |
| 107-02-8 | Acrolein | 12500 | 10500 | 84 | 70-130 |
| 107-13-1 | Acrylonitrile | 2500 | 2680 | 107 | 70-130 |
| 71-43-2 | Benzene | 2500 | 2750 | 110 | 70-130 |
| 108-86-1 | Bromobenzene | 2500 | 2980 | 119 | 70-130 |
| 74-97-5 | Bromochloromethane | 2500 | 2810 | 112 | 70-130 |
| 75-27-4 | Bromodichloromethane | 2500 | 2950 | 118 | 70-130 |
| 75-25-2 | Bromoform | 2500 | 3190 | 128 | 70-130 |
| 74-83-9 | Bromomethane | 2500 | 2140 | 86 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 2850 | 114 | 70-130 |
| 104-51-8 | n-Butylbenzene | 2500 | 3040 | 122 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 2500 | 3020 | 121 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2930 | 117 | 70-130 |
| 75-15-0 | Carbon disulfide | 2500 | 2370 | 95 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2890 | 116 | 70-130 |
| 108-90-7 | Chlorobenzene | 2500 | 3080 | 123 | 70-130 |
| 75-00-3 | Chloroethane | 2500 | 2350 | 94 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 1990 | 80 | 10-160 |
| 67-66-3 | Chloroform | 2500 | 2840 | 114 | 70-130 |
| 74-87-3 | Chloromethane | 2500 | 1810 | 72 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2880 | 115 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2960 | 118 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 2500 | 2700 | 108 | 70-130 |
| 124-48-1 | Dibromochloromethane | 2500 | 3240 | 130 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 2500 | 3100 | 124 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 3030 | 121 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 3030 | 121 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 3000 | 120 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 2030 | 81 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2740 | 110 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2780 | 111 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2670 | 107 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2710 | 108 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2700 | 108 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2830 | 113 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2940 | 118 | 70-130 |

# Blank Spike Summary

Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1842-BS | K55124.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-1

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 2500 | 3190 | 128 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2890 | 116 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 3000 | 120 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 3200 | 128 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 12500 | 14100 | 113 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2970 | 119 | 76-141 |
| 100-41-4 | Ethylbenzene | 2500 | 3100 | 124 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2940 | 118 | 70-130 |
| 591-78-6 | 2-Hexanone | 2500 | 3140 | 126 | 70-130 |
| 98-82-8 | Isopropylbenzene | 2500 | 3440 | 138* a | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 3050 | 122 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2640 | 106 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 2890 | 116 | 70-130 |
| 74-95-3 | Methylene bromide | 2500 | 2900 | 116 | 70-130 |
| 75-09-2 | Methylene chloride | 2500 | 2740 | 110 | 70-130 |
| 91-20-3 | Naphthalene | 2500 | 2830 | 113 | 70-130 |
| 103-65-1 | n-Propylbenzene | 2500 | 3000 | 120 | 70-130 |
| 100-42-5 | Styrene | 2500 | 3180 | 127 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 3130 | 125 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2980 | 119 | 70-130 |
| 127-18-4 | Tetrachloroethene | 2500 | 3170 | 127 | 70-130 |
| 108-88-3 | Toluene | 2500 | 2910 | 116 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 2800 | 112 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2950 | 118 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2860 | 114 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2990 | 120 | 70-130 |
| 79-01-6 | Trichloroethene | 2500 | 2900 | 116 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2510 | 100 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2940 | 118 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2930 | 117 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2900 | 116 | 70-130 |
| 108-05-4 | Vinyl Acetate | 2500 | 2050 | 82 | 70-130 |
| 75-01-4 | Vinyl chloride | 2500 | 1500 | 60* a | 70-130 |
| | m,p-Xylene | 5000 | 6200 | 124 | 70-130 |
| 95-47-6 | o-Xylene | 2500 | 3080 | 123 | 70-130 |
| 1330-20-7 | Xylene (total) | 7500 | 9270 | 124 | 70-130 |

# Blank Spike Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1842-BS | K55124.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-1

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 113% | 70-130% |
| 2037-26-5 | Toluene-D8 | 119% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 115% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

# Blank Spike Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-BS | P55472.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-2

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 66.4 | 133* a | 70-130 |
| 107-02-8 | Acrolein | 250 | 710 | 284* b | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 53.1 | 106 | 70-130 |
| 71-43-2 | Benzene | 50 | 58.1 | 116 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 56.5 | 113 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 53.3 | 107 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 51.4 | 103 | 70-130 |
| 75-25-2 | Bromoform | 50 | 48.5 | 97 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 54.4 | 109 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 62.8 | 126 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 54.3 | 109 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 60.6 | 121 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 59.2 | 118 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 58.6 | 117 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 52.1 | 104 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 55.5 | 111 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 52.9 | 106 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 53.2 | 106 | 10-160 |
| 67-66-3 | Chloroform | 50 | 55.9 | 112 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 54.8 | 110 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 55.6 | 111 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 59.8 | 120 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 51.0 | 102 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 52.2 | 104 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 51.7 | 103 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 55.5 | 111 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 59.8 | 120 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 60.1 | 120 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 60.8 | 122 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 57.8 | 116 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 63.3 | 127 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 57.3 | 115 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 56.1 | 112 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 57.4 | 115 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 56.1 | 112 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 56.6 | 113 | 70-130 |

# Blank Spike Summary

Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-BS | P55472.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-2

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 48.9 | 98 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 58.5 | 117 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 50.9 | 102 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 53.1 | 106 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 230 | 92 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 47.5 | 95 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 56.7 | 113 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 53.4 | 107 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 58.8 | 118 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 63.1 | 126 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 59.8 | 120 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 49.3 | 99 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 52.7 | 105 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 51.8 | 104 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 54.2 | 108 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 51.2 | 102 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 60.6 | 121 | 70-130 |
| 100-42-5 | Styrene | 50 | 56.8 | 114 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 52.7 | 105 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 55.3 | 111 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 59.3 | 119 | 70-130 |
| 108-88-3 | Toluene | 50 | 57.4 | 115 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 47.3 | 95 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 47.5 | 95 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 52.8 | 106 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 51.3 | 103 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 58.7 | 117 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 55.5 | 111 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 55.3 | 111 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 59.0 | 118 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 57.7 | 115 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 43.8 | 88 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 51.1 | 102 | 70-130 |
| | m,p-Xylene | 100 | 116 | 116 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 57.4 | 115 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 173 | 115 | 70-130 |

# Blank Spike Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-BS | P55472.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-2

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 90% | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1417-BS | M43817.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| MSM1417-BSD | M43818.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-3, MC3921-4

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 68.7 | 137* a | 74.4 | 149* a | 8 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 343 | 137* a | 330 | 132* a | 4 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 184 | 368* b | 180 | 360* b | 2 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 49.8 | 100 | 52.1 | 104 | 5 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 54.6 | 109 | 56.2 | 112 | 3 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 52.8 | 106 | 54.4 | 109 | 3 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 55.1 | 110 | 56.1 | 112 | 2 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 51.0 | 102 | 52.0 | 104 | 2 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 48.0 | 96 | 48.5 | 97 | 1 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 51.7 | 103 | 51.3 | 103 | 1 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 51.2 | 102 | 51.9 | 104 | 1 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 53.8 | 108 | 54.0 | 108 | 0 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 51.7 | 103 | 51.5 | 103 | 0 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 46.3 | 93 | 48.4 | 97 | 4 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 59.4 | 119 | 63.0 | 126 | 6 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 56.0 | 112 | 57.4 | 115 | 2 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 47.5 | 95 | 48.9 | 98 | 3 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 15.8 | 32* a | 17.2 | 34* a | 8 | 70-130/25 |
| 67-66-3 | Chloroform | 50 | 49.4 | 99 | 50.3 | 101 | 2 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 40.2 | 80 | 42.3 | 85 | 5 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 49.1 | 98 | 49.8 | 100 | 1 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 49.5 | 99 | 51.2 | 102 | 3 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 39.6 | 79 | 38.9 | 78 | 2 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 58.4 | 117 | 59.2 | 118 | 1 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 52.2 | 104 | 52.7 | 105 | 1 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 52.8 | 106 | 53.5 | 107 | 1 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 52.1 | 104 | 53.7 | 107 | 3 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 50.1 | 100 | 51.6 | 103 | 3 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 50.5 | 101 | 52.0 | 104 | 3 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 48.9 | 98 | 50.1 | 100 | 2 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 51.1 | 102 | 52.8 | 106 | 3 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 51.4 | 103 | 53.7 | 107 | 4 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 50.8 | 102 | 51.6 | 103 | 2 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 52.0 | 104 | 53.6 | 107 | 3 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 52.2 | 104 | 53.4 | 107 | 2 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 49.4 | 99 | 48.7 | 97 | 1 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1417-BS | M43817.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| MSM1417-BSD | M43818.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-3, MC3921-4

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 40.6 | 81 | 41.4 | 83 | 2 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 54.9 | 110 | 57.7 | 115 | 5 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 48.4 | 97 | 49.6 | 99 | 2 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 50.4 | 101 | 52.3 | 105 | 4 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 135 | 54* a | 165 | 66* a | 20 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 42.4 | 85 | 44.7 | 89 | 5 | 77-137/25 |
| 100-41-4 | Ethylbenzene | 50 | 54.7 | 109 | 55.9 | 112 | 2 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 71.8 | 144* a | 73.3 | 147* a | 2 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 62.1 | 124 | 65.9 | 132* a | 6 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 60.8 | 122 | 60.6 | 121 | 0 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 55.1 | 110 | 55.7 | 111 | 1 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 45.0 | 90 | 46.0 | 92 | 2 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 40.8 | 82 | 42.7 | 85 | 5 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 52.2 | 104 | 52.6 | 105 | 1 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 48.5 | 97 | 49.7 | 99 | 2 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 44.5 | 89 | 44.0 | 88 | 1 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 50.9 | 102 | 51.6 | 103 | 1 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 53.2 | 106 | 55.0 | 110 | 3 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 60.1 | 120 | 59.0 | 118 | 2 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 35.3 | 71 | 33.6 | 67* a | 5 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 63.5 | 127 | 64.8 | 130 | 2 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 56.3 | 113 | 58.5 | 117 | 4 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 54.9 | 110 | 54.2 | 108 | 1 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 59.6 | 119 | 60.0 | 120 | 1 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 54.5 | 109 | 56.0 | 112 | 3 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 51.1 | 102 | 52.8 | 106 | 3 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 61.0 | 122 | 63.8 | 128 | 4 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 50.5 | 101 | 53.2 | 106 | 5 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 38.8 | 78 | 39.0 | 78 | 1 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 50.2 | 100 | 50.9 | 102 | 1 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 50.7 | 101 | 50.6 | 101 | 0 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 10.9 | 22* a | 9.2 | 18* a | 17 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 41.3 | 83 | 42.6 | 85 | 3 | 70-130/25 |
| | m,p-Xylene | 100 | 117 | 117 | 118 | 118 | 1 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 57.8 | 116 | 58.5 | 117 | 1 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 174 | 116 | 177 | 118 | 2 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1417-BS | M43817.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| MSM1417-BSD | M43818.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-3, MC3921-4

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 84% | 83% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 93% | 92% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4011-6MS | K55135.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |
| MC4011-6MSD | K55136.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |
| MC4011-6 | K55134.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-1

| CAS No. | Compound | MC4011-6 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 4200 | 4050 | 96 | 3860 | 92 | 5 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 21000 | 17600 | 84 | 18100 | 86 | 3 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 4200 | 4110 | 98 | 3990 | 95 | 3 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 4200 | 4210 | 100 | 4050 | 96 | 4 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 4200 | 4520 | 108 | 4470 | 106 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 4200 | 4190 | 100 | 4170 | 99 | 0 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 4200 | 4560 | 109 | 4350 | 104 | 5 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 4200 | 4930 | 117 | 4790 | 114 | 3 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 4200 | 2700 | 64* [a] | 2590 | 62* [a] | 4 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 4200 | 4380 | 104 | 4190 | 100 | 4 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 4200 | 4740 | 113 | 4570 | 109 | 4 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 4200 | 4770 | 114 | 4650 | 111 | 3 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 4200 | 4590 | 109 | 4470 | 106 | 3 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 4200 | 3120 | 74 | 3060 | 73 | 2 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 4200 | 4400 | 105 | 4180 | 100 | 5 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 4200 | 4840 | 115 | 4660 | 111 | 4 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 4200 | 3040 | 72 | 2980 | 71 | 2 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 4200 | 2780 | 66 | 2700 | 64 | 3 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 4200 | 4260 | 101 | 4190 | 100 | 2 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 4200 | 2120 | 51* [a] | 2010 | 48* [a] | 5 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 4200 | 4420 | 105 | 4320 | 103 | 2 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 4200 | 4570 | 109 | 4480 | 107 | 2 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 4200 | 3970 | 95 | 3810 | 91 | 4 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 4200 | 5010 | 119 | 4840 | 115 | 3 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 4200 | 4770 | 114 | 4710 | 112 | 1 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 4200 | 4680 | 111 | 4560 | 109 | 3 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 4200 | 4640 | 111 | 4540 | 108 | 2 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 4200 | 4580 | 109 | 4500 | 107 | 2 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 4200 | 2040 | 49* [a] | 2010 | 48* [a] | 1 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 4200 | 4060 | 97 | 3960 | 94 | 2 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 4200 | 4170 | 99 | 4030 | 96 | 3 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 4200 | 3750 | 89 | 3690 | 88 | 2 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 4200 | 3980 | 95 | 3940 | 94 | 1 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 4200 | 4000 | 95 | 3860 | 92 | 4 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 4200 | 4350 | 104 | 4210 | 100 | 3 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 4200 | 4550 | 108 | 4470 | 106 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4011-6MS | K55135.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |
| MC4011-6MSD | K55136.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |
| MC4011-6 | K55134.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-1

| CAS No. | Compound | MC4011-6 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 4200 | 4470 | 106 | 4260 | 101 | 5 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 4200 | 4370 | 104 | 4190 | 100 | 4 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 4200 | 4500 | 107 | 4390 | 105 | 2 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 4200 | 4840 | 115 | 4720 | 112 | 3 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 21000 | 20900 | 100 | 19700 | 94 | 6 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 4200 | 4580 | 109 | 4370 | 104 | 5 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 4200 | 4890 | 117 | 4720 | 112 | 4 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 4200 | 4740 | 113 | 4740 | 113 | 0 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 4200 | 4710 | 112 | 4390 | 105 | 7 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 4200 | 5400 | 129 | 5230 | 125 | 3 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 4200 | 4740 | 113 | 4660 | 111 | 2 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 4200 | 3970 | 95 | 3880 | 92 | 2 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 4200 | 4430 | 106 | 4220 | 101 | 5 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 4200 | 4430 | 106 | 4310 | 103 | 3 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 4200 | 4030 | 96 | 3980 | 95 | 1 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 4200 | 4490 | 107 | 4440 | 106 | 1 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 4200 | 4660 | 111 | 4520 | 108 | 3 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 4200 | 4980 | 119 | 4830 | 115 | 3 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 4200 | 4950 | 118 | 4750 | 113 | 4 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 4200 | 4520 | 108 | 4370 | 104 | 3 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 4200 | 4860 | 116 | 4700 | 112 | 3 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 4200 | 4500 | 107 | 4340 | 103 | 4 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 4200 | 4550 | 108 | 4580 | 109 | 1 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 4200 | 4610 | 110 | 4560 | 109 | 1 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 4200 | 4300 | 102 | 4120 | 98 | 4 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 4200 | 4530 | 108 | 4360 | 104 | 4 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 4200 | 4450 | 106 | 4290 | 102 | 4 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 4200 | 3370 | 80 | 3230 | 77 | 4 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 4200 | 4390 | 105 | 4250 | 101 | 3 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 4200 | 4470 | 106 | 4430 | 106 | 1 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 4200 | 4450 | 106 | 4400 | 105 | 1 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 4200 | 2940 | 70 | 2890 | 69* [a] | 2 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 4200 | 2010 | 48* [a] | 2000 | 48* [a] | 0 | 70-130/30 |
| | m,p-Xylene | ND | | 8390 | 9900 | 118 | 9570 | 114 | 3 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 4200 | 4810 | 115 | 4620 | 110 | 4 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 12600 | 14700 | 117 | 14200 | 113 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4011-6MS | K55135.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |
| MC4011-6MSD | K55136.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |
| MC4011-6 | K55134.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-1

| CAS No. | Surrogate Recoveries | MS | MSD | MC4011-6 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 103% | 101% | 110% | 70-130% |
| 2037-26-5 | Toluene-D8 | 109% | 105% | 107% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 106% | 104% | 111% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3921-2MS | P55477.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2MSD | P55478.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2 | P55476.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-2

| CAS No. | Compound | MC3921-2 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 179 | | 62.6 | 91.8 | -139* a | 107 | -116* a | 15 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 313 | 1670 | 533* b | 1870 | 605* b | 11 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 62.6 | 91.5 | 146* b | 103 | 167* b | 12 | 70-130/30 |
| 71-43-2 | Benzene | 8.4 | | 62.6 | 78.2 | 111 | 79.6 | 115 | 2 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 62.6 | 69.3 | 111 | 72.1 | 117 | 4 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 62.6 | 70.8 | 113 | 71.5 | 116 | 1 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 62.6 | 66.8 | 107 | 68.7 | 111 | 3 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 62.6 | 66.4 | 106 | 70.0 | 113 | 5 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 62.6 | 65.1 | 104 | 66.5 | 108 | 2 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 62.6 | 75.1 | 120 | 90.0 | 146* c | 18 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 62.6 | 68.1 | 109 | 75.9 | 123 | 11 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 62.6 | 71.2 | 114 | 76.3 | 123 | 7 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 62.6 | 71.4 | 114 | 75.6 | 122 | 6 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 62.6 | 80.3 | 128 | 81.2 | 131* c | 1 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 62.6 | 68.1 | 109 | 69.0 | 112 | 1 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 62.6 | 70.0 | 112 | 71.8 | 116 | 3 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 62.6 | 69.4 | 111 | 70.5 | 114 | 2 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 62.6 | 77.6 | 124 | 81.8 | 132 | 5 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 62.6 | 72.9 | 116 | 74.5 | 120 | 2 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 62.6 | 76.2 | 122 | 76.5 | 124 | 0 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 62.6 | 68.3 | 109 | 70.4 | 114 | 3 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 62.6 | 74.5 | 119 | 76.0 | 123 | 2 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 62.6 | 79.8 | 127 | 93.8 | 152* c | 16 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 62.6 | 66.8 | 107 | 69.2 | 112 | 4 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 62.6 | 72.4 | 116 | 76.3 | 123 | 5 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 62.6 | 65.9 | 105 | 70.6 | 114 | 7 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 62.6 | 72.3 | 115 | 74.9 | 121 | 4 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 62.6 | 71.6 | 114 | 76.6 | 124 | 7 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 62.6 | 90.0 | 144* c | 88.8 | 144* c | 1 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 62.6 | 77.9 | 124 | 78.7 | 127 | 1 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 62.6 | 73.5 | 117 | 77.2 | 125 | 5 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 62.6 | 80.8 | 129 | 83.7 | 135* c | 4 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 62.6 | 74.7 | 119 | 75.5 | 122 | 1 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 62.6 | 77.7 | 124 | 77.7 | 126 | 0 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 62.6 | 70.2 | 112 | 72.3 | 117 | 3 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 62.6 | 77.6 | 124 | 80.3 | 130 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3921-2MS | P55477.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2MSD | P55478.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2 | P55476.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-2

| CAS No. | Compound | MC3921-2 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 62.6 | 64.3 | 103 | 66.4 | 107 | 3 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 62.6 | 77.7 | 124 | 78.6 | 127 | 1 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 62.6 | 64.9 | 104 | 67.5 | 109 | 4 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 62.6 | 70.1 | 112 | 72.5 | 117 | 3 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 313 | 411 | 131* c | 543 | 176* c | 28 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 62.6 | 66.6 | 106 | 75.4 | 122 | 12 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 13.4 | | 62.6 | 78.0 | 103 | 80.6 | 109 | 3 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 62.6 | 58.0 | 93 | 66.3 | 107 | 13 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 62.6 | 79.2 | 126 | 84.7 | 137* c | 7 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | 1.7 | J | 62.6 | 80.8 | 126 | 83.8 | 133* c | 4 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 62.6 | 71.6 | 114 | 77.7 | 126 | 8 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 62.6 | 70.4 | 112 | 77.0 | 125 | 9 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 62.6 | 77.3 | 123 | 91.5 | 148* c | 17 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 62.6 | 71.5 | 114 | 74.0 | 120 | 3 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 62.6 | 72.7 | 116 | 73.9 | 120 | 2 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 62.6 | 61.8 | 99 | 66.9 | 108 | 8 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 4.0 | J | 62.6 | 75.7 | 114 | 79.6 | 122 | 5 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 62.6 | 70.9 | 113 | 73.6 | 119 | 4 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 62.6 | 65.5 | 105 | 67.2 | 109 | 3 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 62.6 | 80.8 | 129 | 88.0 | 142* c | 9 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 62.6 | 74.9 | 120 | 75.2 | 122 | 0 | 70-130/30 |
| 108-88-3 | Toluene | 10.0 | | 62.6 | 78.8 | 110 | 80.1 | 113 | 2 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 62.6 | 52.7 | 84 | 60.7 | 98 | 14 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 62.6 | 58.3 | 93 | 64.8 | 105 | 11 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 62.6 | 71.3 | 114 | 69.9 | 113 | 2 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 62.6 | 71.2 | 114 | 71.6 | 116 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 62.6 | 76.3 | 122 | 77.2 | 125 | 1 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 62.6 | 75.6 | 121 | 76.5 | 124 | 1 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 62.6 | 85.1 | 136* c | 95.9 | 155* c | 12 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 3.1 | J | 62.6 | 72.9 | 111 | 75.8 | 118 | 4 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 3.0 | J | 62.6 | 71.5 | 109 | 73.5 | 114 | 3 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 62.6 | 67.2 | 107 | 72.2 | 117 | 7 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 62.6 | 66.3 | 106 | 68.1 | 110 | 3 | 70-130/30 |
| | m,p-Xylene | 8.1 | | 125 | 149 | 112 | 152 | 116 | 2 | 70-130/30 |
| 95-47-6 | o-Xylene | 2.8 | | 62.6 | 74.0 | 114 | 75.5 | 118 | 2 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 10.9 | | 188 | 223 | 113 | 228 | 117 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3921-2MS | P55477.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2MSD | P55478.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2 | P55476.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-2

| CAS No. | Surrogate Recoveries | MS | MSD | MC3921-2 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 93% | 95% | 121% | 70-130% |
| 2037-26-5 | Toluene-D8 | 102% | 110% | 144%* d | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 94% | 99% | 150%* d | 70-130% |

(a) Outside control limits due to high level in sample relative to spike amount.
(b) Outside control limits. Associated samples are non-detect for this compound.
(c) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(d) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3904-15MS | M43830.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| MC3904-15MSD | M43831.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| MC3904-15 | M43827.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-3, MC3921-4

| CAS No. | Compound | MC3904-15 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 5.0 U | | 50 | 35.2 | 70 | 37.4 | 75 | 6 | 70-130/30 |
| 107-02-8 | Acrolein | 25 U | | 250 | 598 | 239* [a] | 609 | 244* [a] | 2 | 70-130/30 |
| 107-13-1 | Acrylonitrile | 5.0 U | | 50 | 190 | 380* [b] | 196 | 392* [b] | 3 | 70-130/30 |
| 71-43-2 | Benzene | 0.50 U | | 50 | 50.7 | 101 | 52.6 | 105 | 4 | 70-130/30 |
| 108-86-1 | Bromobenzene | 5.0 U | | 50 | 54.9 | 110 | 56.2 | 112 | 2 | 70-130/30 |
| 74-97-5 | Bromochloromethane | 5.0 U | | 50 | 55.4 | 111 | 57.6 | 115 | 4 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | 1.0 U | | 50 | 58.4 | 117 | 59.2 | 118 | 1 | 70-130/30 |
| 75-25-2 | Bromoform | 1.0 U | | 50 | 53.7 | 107 | 55.0 | 110 | 2 | 70-130/30 |
| 74-83-9 | Bromomethane | 2.0 U | | 50 | 50.9 | 102 | 52.2 | 104 | 3 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | 5.0 U | | 50 | 58.2 | 116 | 60.8 | 122 | 4 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | 5.0 U | | 50 | 53.4 | 107 | 55.1 | 110 | 3 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | 5.0 U | | 50 | 53.4 | 107 | 54.8 | 110 | 3 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | 5.0 U | | 50 | 51.2 | 102 | 53.0 | 106 | 3 | 70-130/30 |
| 75-15-0 | Carbon disulfide | 5.0 U | | 50 | 48.9 | 98 | 51.3 | 103 | 5 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | 1.0 U | | 50 | 64.6 | 129 | 65.7 | 131* [a] | 2 | 70-130/30 |
| 108-90-7 | Chlorobenzene | 1.0 U | | 50 | 56.5 | 113 | 57.9 | 116 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | 2.0 U | | 50 | 47.7 | 95 | 50.9 | 102 | 6 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 5.0 U | | 50 | ND | 0* [a] | ND | 0* [a] | nc | 70-130/30 |
| 67-66-3 | Chloroform | 1.0 U | | 50 | 52.0 | 104 | 53.6 | 107 | 3 | 70-130/30 |
| 74-87-3 | Chloromethane | 2.0 U | | 50 | 40.9 | 82 | 42.8 | 86 | 5 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | 5.0 U | | 50 | 49.1 | 98 | 50.0 | 100 | 2 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | 5.0 U | | 50 | 51.2 | 102 | 52.2 | 104 | 2 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 5.0 U | | 50 | 44.9 | 90 | 46.1 | 92 | 3 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | 1.0 U | | 50 | 60.8 | 122 | 61.2 | 122 | 1 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | 2.0 U | | 50 | 54.2 | 108 | 55.4 | 111 | 2 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | 1.0 U | | 50 | 53.3 | 107 | 54.3 | 109 | 2 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | 1.0 U | | 50 | 53.4 | 107 | 54.7 | 109 | 2 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | 1.0 U | | 50 | 52.1 | 104 | 52.8 | 106 | 1 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | 2.0 U | | 50 | 55.8 | 112 | 57.5 | 115 | 3 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | 1.0 U | | 50 | 50.4 | 101 | 52.0 | 104 | 3 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | 1.0 U | | 50 | 57.6 | 115 | 57.4 | 115 | 0 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | 1.0 U | | 50 | 53.6 | 107 | 56.2 | 112 | 5 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | 1.0 U | | 50 | 51.1 | 102 | 53.3 | 107 | 4 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | 1.0 U | | 50 | 53.4 | 107 | 56.3 | 113 | 5 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | 2.0 U | | 50 | 52.6 | 105 | 54.3 | 109 | 3 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | 5.0 U | | 50 | 50.6 | 99 | 51.7 | 101 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3904-15MS | M43830.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| MC3904-15MSD | M43831.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| MC3904-15 | M43827.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-3, MC3921-4

| CAS No. | Compound | MC3904-15 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 5.0 U | | 50 | 61.8 | 124 | 62.6 | 125 | 1 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | 5.0 U | | 50 | 57.2 | 114 | 59.5 | 119 | 4 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | 0.50 U | | 50 | 52.6 | 105 | 53.7 | 107 | 2 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | 0.50 U | | 50 | 57.6 | 115 | 57.9 | 116 | 1 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | 25 U | | 250 | 176 | 70 | 195 | 78 | 10 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | 5.0 U | | 50 | 49.4 | 99 | 49.9 | 100 | 1 | 72-139/30 |
| 100-41-4 | Ethylbenzene | 1.0 U | | 50 | 53.9 | 108 | 56.3 | 113 | 4 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | 5.0 U | | 50 | 74.8 | 150* [a] | 76.6 | 153* [a] | 2 | 70-130/30 |
| 591-78-6 | 2-Hexanone | 5.0 U | | 50 | 43.1 | 86 | 44.5 | 89 | 3 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | 5.0 U | | 50 | 58.8 | 118 | 60.5 | 121 | 3 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | 5.0 U | | 50 | 55.6 | 111 | 57.0 | 114 | 2 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | 1.0 U | | 50 | 48.7 | 97 | 50.9 | 102 | 4 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 5.0 U | | 50 | 45.0 | 90 | 45.4 | 91 | 1 | 70-130/30 |
| 74-95-3 | Methylene bromide | 5.0 U | | 50 | 56.6 | 113 | 56.9 | 114 | 1 | 70-130/30 |
| 75-09-2 | Methylene chloride | 2.0 U | | 50 | 50.9 | 102 | 52.8 | 106 | 4 | 70-130/30 |
| 91-20-3 | Naphthalene | 5.0 U | | 50 | 47.6 | 95 | 49.8 | 100 | 5 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 5.0 U | | 50 | 50.7 | 101 | 51.9 | 104 | 2 | 70-130/30 |
| 100-42-5 | Styrene | 5.0 U | | 50 | 53.7 | 107 | 54.6 | 109 | 2 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 5.0 U | | 50 | 58.0 | 116 | 60.3 | 121 | 4 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.0 U | | 50 | 42.1 | 84 | 43.1 | 86 | 2 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | 1.0 U | | 50 | 62.3 | 125 | 64.3 | 129 | 3 | 70-130/30 |
| 108-88-3 | Toluene | 1.0 U | | 50 | 57.3 | 115 | 58.7 | 117 | 2 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 5.0 U | | 50 | 57.4 | 115 | 60.5 | 121 | 5 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 5.0 U | | 50 | 61.3 | 123 | 64.2 | 128 | 5 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | 1.0 U | | 50 | 58.2 | 116 | 59.8 | 120 | 3 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | 1.0 U | | 50 | 55.8 | 112 | 56.3 | 113 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | 1.0 U | | 50 | 56.5 | 113 | 57.6 | 115 | 2 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | 1.0 U | | 50 | 55.8 | 112 | 57.6 | 115 | 3 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | 5.0 U | | 50 | 42.8 | 86 | 43.1 | 86 | 1 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 5.0 U | | 50 | 50.2 | 100 | 51.5 | 103 | 3 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 5.0 U | | 50 | 49.8 | 100 | 51.2 | 102 | 3 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | 5.0 U | | 50 | 32.3 | 65* [a] | 34.0 | 68* [a] | 5 | 70-130/30 |
| 75-01-4 | Vinyl chloride | 1.0 U | | 50 | 42.5 | 85 | 43.6 | 87 | 3 | 70-130/30 |
| | m,p-Xylene | 1.0 U | | 100 | 116 | 116 | 119 | 119 | 3 | 70-130/30 |
| 95-47-6 | o-Xylene | 1.0 U | | 50 | 56.0 | 112 | 59.1 | 118 | 5 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 1.0 U | | 150 | 172 | 115 | 178 | 119 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3904-15MS | M43830.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| MC3904-15MSD | M43831.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| MC3904-15 | M43827.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3921-3, MC3921-4

| CAS No. | Surrogate Recoveries | MS | MSD | MC3904-15 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 87% | 89% | 89% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 99% | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 93% | 94% | 92% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Volatile Internal Standard Area Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSK1842-CC1831 | Injection Date: | 09/30/11 |
| Lab File ID: | K55123.D | Injection Time: | 10:07 |
| Instrument ID: | GCMSK | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 299822 | 8.86 | 387445 | 9.71 | 182264 | 12.97 | 219610 | 15.53 | 91135 | 6.48 |
| Upper Limit [a] | 599644 | 9.36 | 774890 | 10.21 | 364528 | 13.47 | 439220 | 16.03 | 182270 | 6.98 |
| Lower Limit [b] | 149911 | 8.36 | 193723 | 9.21 | 91132 | 12.47 | 109805 | 15.03 | 45568 | 5.98 |

| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| MSK1842-BS | 252693 | 8.86 | 328617 | 9.71 | 160493 | 12.97 | 186648 | 15.53 | 80315 | 6.48 |
| MSK1842-MB | 289254 | 8.87 | 390063 | 9.72 | 179017 | 12.97 | 195362 | 15.53 | 85672 | 6.48 |
| ZZZZZZ | 285980 | 8.86 | 383528 | 9.71 | 171416 | 12.97 | 204430 | 15.53 | 74002 | 6.48 |
| ZZZZZZ | 306639 | 8.86 | 410337 | 9.71 | 183216 | 12.97 | 215810 | 15.53 | 100704 | 6.48 |
| ZZZZZZ | 304932 | 8.86 | 406409 | 9.71 | 184424 | 12.97 | 219155 | 15.53 | 93181 | 6.47 |
| ZZZZZZ | 311139 | 8.86 | 409519 | 9.71 | 187331 | 12.97 | 217338 | 15.53 | 83838 | 6.48 |
| ZZZZZZ | 306588 | 8.86 | 410598 | 9.71 | 188301 | 12.97 | 214011 | 15.53 | 96823 | 6.48 |
| ZZZZZZ | 300000 | 8.86 | 406773 | 9.71 | 184876 | 12.97 | 206460 | 15.53 | 88585 | 6.48 |
| MC4011-6 | 295032 | 8.86 | 401138 | 9.71 | 184714 | 12.97 | 210607 | 15.53 | 84825 | 6.48 |
| MC4011-6MS | 287651 | 8.86 | 372155 | 9.71 | 178523 | 12.97 | 212094 | 15.53 | 86802 | 6.48 |
| MC4011-6MSD | 293485 | 8.86 | 384859 | 9.71 | 184095 | 12.97 | 216454 | 15.53 | 84997 | 6.48 |
| ZZZZZZ | 310640 | 8.86 | 414791 | 9.71 | 189247 | 12.97 | 217559 | 15.53 | 103498 | 6.48 |
| ZZZZZZ | 291544 | 8.87 | 391643 | 9.72 | 177165 | 12.97 | 200310 | 15.53 | 99990 | 6.49 |
| MC3921-1 | 288124 | 8.86 | 376253 | 9.71 | 171382 | 12.97 | 214956 | 15.53 | 84628 | 6.48 |
| ZZZZZZ | 302352 | 8.87 | 399556 | 9.71 | 176057 | 12.97 | 214220 | 15.53 | 91326 | 6.48 |
| ZZZZZZ | 297601 | 8.86 | 403794 | 9.71 | 182335 | 12.97 | 210507 | 15.53 | 81126 | 6.48 |
| ZZZZZZ | 311015 | 8.86 | 413719 | 9.71 | 189775 | 12.97 | 216240 | 15.53 | 96616 | 6.48 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1416-CC1371 | Injection Date: | 10/06/11 |
| Lab File ID: | M43792.D | Injection Time: | 09:35 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 95265 | 9.19 | 139983 | 10.06 | 72856 | 13.34 | 95354 | 15.90 | 20822 | 6.74 |
| Upper Limit [a] | 190530 | 9.69 | 279966 | 10.56 | 145712 | 13.84 | 190708 | 16.40 | 41644 | 7.24 |
| Lower Limit [b] | 47633 | 8.69 | 69992 | 9.56 | 36428 | 12.84 | 47677 | 15.40 | 10411 | 6.24 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1416-BS | 98211 | 9.19 | 145594 | 10.07 | 75183 | 13.34 | 97218 | 15.90 | 23516 | 6.75 |
| MSM1416-BSD | 100336 | 9.19 | 147143 | 10.07 | 77609 | 13.33 | 99303 | 15.90 | 24059 | 6.74 |
| MSM1416-MB | 89971 | 9.19 | 130976 | 10.07 | 66904 | 13.34 | 88090 | 15.90 | 21938 | 6.74 |
| ZZZZZZ | 86108 | 9.19 | 124344 | 10.06 | 61467 | 13.34 | 81363 | 15.90 | 22653 | 6.74 |
| ZZZZZZ | 87180 | 9.19 | 126031 | 10.07 | 61986 | 13.34 | 81157 | 15.90 | 22644 | 6.74 |
| ZZZZZZ | 82952 | 9.19 | 120841 | 10.07 | 59831 | 13.34 | 78179 | 15.90 | 22290 | 6.74 |
| ZZZZZZ | 82038 | 9.19 | 118483 | 10.07 | 59008 | 13.34 | 76673 | 15.90 | 22598 | 6.73 |
| ZZZZZZ | 83618 | 9.19 | 120868 | 10.07 | 60397 | 13.34 | 77728 | 15.90 | 22878 | 6.74 |
| ZZZZZZ | 82171 | 9.19 | 119654 | 10.07 | 58910 | 13.34 | 75084 | 15.90 | 22656 | 6.74 |
| ZZZZZZ | 76589 | 9.19 | 112810 | 10.07 | 55106 | 13.34 | 71718 | 15.90 | 22042 | 6.74 |
| ZZZZZZ | 77565 | 9.19 | 111765 | 10.07 | 56806 | 13.34 | 72386 | 15.90 | 21552 | 6.74 |
| MC3964-1 | 81293 | 9.19 | 119141 | 10.07 | 59333 | 13.34 | 79524 | 15.90 | 22064 | 6.74 |
| ZZZZZZ | 82505 | 9.19 | 119666 | 10.07 | 58669 | 13.34 | 75989 | 15.90 | 23383 | 6.73 |
| ZZZZZZ | 80753 | 9.19 | 116498 | 10.07 | 56479 | 13.33 | 75264 | 15.90 | 21407 | 6.74 |
| ZZZZZZ | 89292 | 9.19 | 131346 | 10.07 | 66573 | 13.34 | 88380 | 15.90 | 22808 | 6.75 |
| ZZZZZZ | 95255 | 9.19 | 138858 | 10.07 | 69185 | 13.34 | 91674 | 15.90 | 25266 | 6.74 |
| MC3964-1MS | 100075 | 9.19 | 146774 | 10.07 | 75093 | 13.34 | 97376 | 15.90 | 26042 | 6.74 |
| MC3964-1MSD | 103720 | 9.19 | 152316 | 10.07 | 77751 | 13.34 | 98766 | 15.90 | 26113 | 6.74 |
| ZZZZZZ | 105372 | 9.19 | 153909 | 10.07 | 75537 | 13.34 | 99006 | 15.90 | 27138 | 6.73 |
| ZZZZZZ | 100938 | 9.19 | 144618 | 10.07 | 73506 | 13.34 | 96776 | 15.90 | 25581 | 6.74 |
| ZZZZZZ | 106099 | 9.19 | 153970 | 10.07 | 76217 | 13.33 | 99860 | 15.90 | 25531 | 6.74 |
| MSM1417-BS | 104656 | 9.19 | 155330 | 10.07 | 76981 | 13.34 | 98502 | 15.90 | 23761 | 6.74 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1417-CC1370 | Injection Date: | 10/07/11 |
| Lab File ID: | M43817.D | Injection Time: | 09:16 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 104656 | 9.19 | 155330 | 10.07 | 76981 | 13.34 | 98502 | 15.90 | 23761 | 6.74 |
| Upper Limit [a] | 209312 | 9.69 | 310660 | 10.57 | 153962 | 13.84 | 197004 | 16.40 | 47522 | 7.24 |
| Lower Limit [b] | 52328 | 8.69 | 77665 | 9.57 | 38491 | 12.84 | 49251 | 15.40 | 11881 | 6.24 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1417-BSD | 103587 | 9.19 | 149273 | 10.07 | 76965 | 13.34 | 99280 | 15.90 | 24557 | 6.75 |
| MSM1417-MB | 95722 | 9.19 | 141041 | 10.07 | 70917 | 13.34 | 92325 | 15.90 | 24297 | 6.75 |
| ZZZZZZ | 92160 | 9.19 | 136103 | 10.07 | 69708 | 13.34 | 90781 | 15.90 | 24046 | 6.74 |
| ZZZZZZ | 90345 | 9.19 | 130835 | 10.07 | 65771 | 13.34 | 87482 | 15.90 | 23270 | 6.74 |
| ZZZZZZ | 85571 | 9.19 | 124700 | 10.07 | 61399 | 13.33 | 81943 | 15.90 | 23045 | 6.74 |
| ZZZZZZ | 86615 | 9.19 | 126101 | 10.07 | 62828 | 13.34 | 81760 | 15.90 | 22960 | 6.74 |
| ZZZZZZ | 84786 | 9.19 | 123941 | 10.07 | 61004 | 13.34 | 79637 | 15.90 | 23053 | 6.74 |
| ZZZZZZ | 82721 | 9.19 | 120321 | 10.07 | 59288 | 13.33 | 77895 | 15.90 | 21940 | 6.74 |
| MC3904-15 | 82242 | 9.19 | 117560 | 10.07 | 58514 | 13.34 | 75852 | 15.90 | 23312 | 6.74 |
| ZZZZZZ | 81697 | 9.19 | 119483 | 10.07 | 58970 | 13.34 | 77946 | 15.90 | 23233 | 6.74 |
| ZZZZZZ | 81538 | 9.19 | 116647 | 10.07 | 57309 | 13.34 | 75260 | 15.90 | 23102 | 6.74 |
| MC3904-15MS | 85947 | 9.19 | 125926 | 10.07 | 65733 | 13.34 | 84889 | 15.90 | 24408 | 6.75 |
| MC3904-15MSD | 87285 | 9.19 | 128265 | 10.07 | 66648 | 13.34 | 87147 | 15.90 | 25939 | 6.74 |
| MC3921-4 | 89992 | 9.19 | 131244 | 10.07 | 64639 | 13.34 | 84375 | 15.90 | 26151 | 6.74 |
| MC3921-3 | 85510 | 9.19 | 122606 | 10.07 | 63049 | 13.34 | 82008 | 15.90 | 24842 | 6.74 |
| ZZZZZZ | 82502 | 9.19 | 120238 | 10.07 | 59498 | 13.34 | 79602 | 15.90 | 23397 | 6.74 |
| ZZZZZZ | 81582 | 9.19 | 118361 | 10.07 | 57594 | 13.34 | 76032 | 15.90 | 23281 | 6.74 |
| ZZZZZZ | 79806 | 9.19 | 115935 | 10.07 | 56761 | 13.34 | 74626 | 15.90 | 22176 | 6.75 |
| ZZZZZZ | 79521 | 9.19 | 117814 | 10.07 | 58383 | 13.34 | 79513 | 15.90 | 21645 | 6.74 |
| ZZZZZZ | 103810 | 9.19 | 152630 | 10.06 | 76417 | 13.33 | 101988 | 15.90 | 26460 | 6.74 |
| ZZZZZZ | 106193 | 9.19 | 154639 | 10.07 | 75661 | 13.34 | 102862 | 15.90 | 26724 | 6.74 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSP1816-CC1815 | Injection Date: | 10/06/11 |
| Lab File ID: | P55471.D | Injection Time: | 09:58 |
| Instrument ID: | GCMSP | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 83163 | 8.50 | 138001 | 9.35 | 74719 | 12.57 | 54357 | 15.13 | 29790 | 6.26 |
| Upper Limit [a] | 166326 | 9.00 | 276002 | 9.85 | 149438 | 13.07 | 108714 | 15.63 | 59580 | 6.76 |
| Lower Limit [b] | 41582 | 8.00 | 69001 | 8.85 | 37360 | 12.07 | 27179 | 14.63 | 14895 | 5.76 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSP1816-BS | 83854 | 8.50 | 140081 | 9.35 | 75068 | 12.57 | 54140 | 15.13 | 30900 | 6.26 |
| MSP1816-MB | 69783 | 8.51 | 114190 | 9.36 | 57324 | 12.58 | 34582 | 15.14 | 24102 | 6.31 |
| MC3921-2 | 53944 | 8.51 | 90066 | 9.36 | 45294 | 12.58 | 28489 | 15.14 | 27620 | 6.39 |
| MC3921-2MS | 78832 | 8.50 | 133947 | 9.35 | 72083 | 12.57 | 52976 | 15.13 | 43232 | 6.28 |
| MC3921-2MSD | 74780 | 8.50 | 126335 | 9.35 | 67726 | 12.57 | 49416 | 15.13 | 49242 | 6.26 |
| ZZZZZZ | 62020 | 8.51 | 104610 | 9.36 | 52375 | 12.58 | 33622 | 15.13 | 40087 | 6.32 |
| ZZZZZZ | 54959 | 8.50 | 91183 | 9.36 | 47937 | 12.58 | 32837 | 15.13 | 31178 | 6.31 |
| ZZZZZZ | 65980 | 8.51 | 111733 | 9.36 | 57230 | 12.58 | 37080 | 15.14 | 43647 | 6.34 |
| ZZZZZZ | 55569 | 8.50 | 93030 | 9.36 | 47654 | 12.58 | 32267 | 15.13 | 32324 | 6.29 |
| ZZZZZZ | 77439 | 8.50 | 125935 | 9.36 | 65483 | 12.57 | 49375 | 15.13 | 45444 | 6.29 |
| ZZZZZZ | 72789 | 8.50 | 118453 | 9.36 | 58471 | 12.58 | 43146 | 15.13 | 43509 | 6.29 |
| ZZZZZZ | 67303 | 8.49 | 110264 | 9.35 | 56007 | 12.57 | 40037 | 15.13 | 42083 | 6.18 |
| ZZZZZZ | 88575 | 8.50 | 143581 | 9.35 | 75004 | 12.57 | 53494 | 15.13 | 42716 | 6.31 |
| ZZZZZZ | 80501 | 8.50 | 131067 | 9.36 | 65595 | 12.58 | 49175 | 15.13 | 44781 | 6.30 |
| ZZZZZZ | 74489 | 8.50 | 121457 | 9.36 | 61511 | 12.58 | 41041 | 15.13 | 41168 | 6.28 |
| ZZZZZZ | 69984 | 8.50 | 115826 | 9.36 | 59202 | 12.58 | 40969 | 15.13 | 41101 | 6.29 |
| ZZZZZZ | 68754 | 8.50 | 113794 | 9.36 | 57474 | 12.58 | 37448 | 15.13 | 36550 | 6.31 |
| ZZZZZZ | 67922 | 8.50 | 113247 | 9.36 | 58349 | 12.58 | 38037 | 15.13 | 40061 | 6.31 |
| ZZZZZZ | 65660 | 8.50 | 108890 | 9.36 | 56199 | 12.58 | 35844 | 15.13 | 35906 | 6.29 |
| ZZZZZZ | 66387 | 8.50 | 109965 | 9.36 | 56738 | 12.58 | 35724 | 15.14 | 36470 | 6.32 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSP1817-CC1815 | Injection Date: | 10/07/11 |
| Lab File ID: | P55497.D | Injection Time: | 10:06 |
| Instrument ID: | GCMSP | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 82447 | 8.50 | 139556 | 9.35 | 77228 | 12.57 | 58528 | 15.13 | 33098 | 6.25 |
| Upper Limit [a] | 164894 | 9.00 | 279112 | 9.85 | 154456 | 13.07 | 117056 | 15.63 | 66196 | 6.75 |
| Lower Limit [b] | 41224 | 8.00 | 69778 | 8.85 | 38614 | 12.07 | 29264 | 14.63 | 16549 | 5.75 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSP1817-BS | 77797 | 8.50 | 128020 | 9.35 | 71061 | 12.57 | 53009 | 15.13 | 25091 | 6.22 |
| MSP1817-MB | 70073 | 8.50 | 116276 | 9.36 | 59916 | 12.58 | 38084 | 15.13 | 24441 | 6.29 |
| MC4031-3 | 65376 | 8.50 | 110054 | 9.36 | 56126 | 12.58 | 37587 | 15.13 | 39500 | 6.31 |
| MC4031-3MS | 75178 | 8.50 | 130618 | 9.35 | 73374 | 12.57 | 56272 | 15.13 | 44014 | 6.23 |
| MC4031-3MSD | 84452 | 8.50 | 142346 | 9.35 | 80045 | 12.57 | 61142 | 15.13 | 50339 | 6.23 |
| MC3921-2 [c] | 49960 | 8.51 | 84812 | 9.36 | 43096 | 12.58 | 29064[d] | 15.13 | 28067 | 6.37 |
| ZZZZZZ | 51032 | 8.50 | 86362 | 9.36 | 44506 | 12.58 | 29496 | 15.13 | 31509 | 6.29 |
| ZZZZZZ | 54280 | 8.50 | 89914 | 9.36 | 46663 | 12.58 | 30211 | 15.13 | 29771 | 6.36 |
| ZZZZZZ | 61642 | 8.50 | 106035 | 9.36 | 57477 | 12.57 | 41557 | 15.13 | 38107 | 6.25 |
| ZZZZZZ | 61321 | 8.50 | 100631 | 9.36 | 52005 | 12.57 | 35573 | 15.13 | 35821 | 6.27 |
| ZZZZZZ | 71070 | 8.50 | 113286 | 9.36 | 59441 | 12.58 | 40405 | 15.13 | 34406 | 6.31 |
| ZZZZZZ | 68541 | 8.50 | 112965 | 9.36 | 65377 | 12.57 | 50602 | 15.13 | 39553 | 6.28 |
| ZZZZZZ | 74367 | 8.51 | 120228 | 9.36 | 59710 | 12.58 | 40103 | 15.13 | 21834 | 6.37 |
| ZZZZZZ | 69877 | 8.51 | 112686 | 9.36 | 57746 | 12.58 | 38709 | 15.13 | 19576 | 6.38 |
| ZZZZZZ | 66226 | 8.50 | 111355 | 9.36 | 56701 | 12.58 | 37169 | 15.13 | 20557 | 6.34 |
| ZZZZZZ | 63040 | 8.50 | 104803 | 9.36 | 53553 | 12.58 | 33818 | 15.13 | 20850 | 6.33 |
| ZZZZZZ | 45711 | 8.50 | 76818 | 9.36 | 40107 | 12.58 | 24946[d] | 15.14 | 16473[d] | 6.29 |
| ZZZZZZ | 59794 | 8.50 | 101203 | 9.36 | 53711 | 12.58 | 33978 | 15.13 | 32414 | 6.30 |
| ZZZZZZ | 59522 | 8.50 | 101242 | 9.35 | 52251 | 12.58 | 30049 | 15.13 | 29182 | 6.33 |
| ZZZZZZ | 55291 | 8.50 | 96760 | 9.36 | 50229 | 12.57 | 31591 | 15.13 | 31702 | 6.26 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Confirmation run for surrogate recoveries.
(d) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Volatile Surrogate Recovery Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3921-3 | M43833.D | 90.0 | 101.0 | 91.0 |
| MC3921-4 | M43832.D | 89.0 | 99.0 | 91.0 |
| MC3904-15MS | M43830.D | 87.0 | 98.0 | 93.0 |
| MC3904-15MSD | M43831.D | 89.0 | 99.0 | 94.0 |
| MSM1417-BS | M43817.D | 84.0 | 98.0 | 93.0 |
| MSM1417-BSD | M43818.D | 83.0 | 98.0 | 92.0 |
| MSM1417-MB | M43820.D | 86.0 | 98.0 | 91.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3921-1 | K55140.D | 104.0 | 104.0 | 119.0 |
| MC3921-2 | P55505.D | 127.0 | 148.0* a | 144.0* a |
| MC3921-2 | P55476.D | 121.0 | 144.0* a | 150.0* a |
| MC3921-2MS | P55477.D | 93.0 | 102.0 | 94.0 |
| MC3921-2MSD | P55478.D | 95.0 | 110.0 | 99.0 |
| MC4011-6MS | K55135.D | 103.0 | 109.0 | 106.0 |
| MC4011-6MSD | K55136.D | 101.0 | 105.0 | 104.0 |
| MSK1842-BS | K55124.D | 113.0 | 119.0 | 115.0 |
| MSK1842-MB | K55127.D | 104.0 | 101.0 | 109.0 |
| MSP1816-BS | P55472.D | 90.0 | 104.0 | 95.0 |
| MSP1816-MB | P55474.D | 83.0 | 104.0 | 111.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

(a) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

New England ACCUTEST LABORATORIES

## GC Volatiles



## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1337-MB | BH24330.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1337 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3921-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 0.95 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 88% | 36-148% |

# Method Blank Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1339-MB | BH24359.D | 1 | 10/05/11 | WS | n/a | n/a | GBH1339 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3921-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 0.95 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 90% | 36-148% |

# Method Blank Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1338-MB | BH24359A.D1 | | 10/05/11 | WS | n/a | n/a | GBH1338 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3921-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 0.10 | 0.070 | mg/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 90% | 60-126% |

# Blank Spike Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1337-BSP | BH24331.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1337 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3921-1

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 20.1 | 101 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 87% | 36-148% |

# Blank Spike Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1339-BSP | BH24360.D | 1 | 10/05/11 | WS | n/a | n/a | GBH1339 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3921-2

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 19.2 | 96 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 92% | 36-148% |

# Blank Spike Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1338-BSP | BH24360A.D1 | | 10/05/11 | WS | n/a | n/a | GBH1338 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3921-3

| CAS No. | Compound | Spike mg/l | BSP mg/l | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 0.4 | 0.384 | 96 | 68-134 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 92% | 60-126% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4079-11MS | BH24338.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1337 |
| MC4079-11MSD | BH24339.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1337 |
| MC4079-11 | BH24337.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1337 |



The QC reported here applies to the following samples: Method: SW846 8015

MC3921-1

| CAS No. | Compound | MC4079-11 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 51.1 | 66.7 | 131 | 73.9 | 145 | 10 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4079-11 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 88% | 85% | 86% | 36-148% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4127-1MS | BH24362.D | 1 | 10/05/11 | WS | n/a | n/a | GBH1338 |
| MC4127-1MSD | BH24363.D | 1 | I0/05/11 | WS | n/a | n/a | GBH1338 |
| MC4127-1 | BH24361.D | 1 | 10/05/1I | WS | n/a | n/a | GBH1338 |



The QC reported here applies to the following samples: Method: SW846 8015

MC3921-3

| CAS No. | Compound | MC4127-1 mg/I | Q | Spike mg/I | MS mg/l | MS % | MSD mg/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 0.4 | 0.397 | 99 | 0.378 | 95 | 5 | 72-131/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4127-1 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 91% | 89% | 92% | 60-126% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3921-2MS | BH24374.D | 1 | 10/05/11 | WS | n/a | n/a | GBH1339 |
| MC3921-2MSD | BH24375.D | 1 | 10/05/11 | WS | n/a | n/a | GBH1339 |
| MC3921-2 | BH24373.D | 1 | 10/05/11 | WS | n/a | n/a | GBH1339 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3921-2

| CAS No. | Compound | MC3921-2 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 56 | 63.9 | 114 | 57.8 | 103 | 10 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3921-2 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 88% | 83% | 85% | 36-148% |

6.3.3

6

# Volatile Surrogate Recovery Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8015 Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3921-3 | BH24368.D | 85.0 |
| GBH1338-BSP | BH24360A.D | 92.0 |
| GBH1338-MB | BH24359A.D | 90.0 |
| MC4127-1MS | BH24362.D | 91.0 |
| MC4127-1MSD | BH24363.D | 89.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 60-126% |

(a) Recovery from GC signal #1

# Volatile Surrogate Recovery Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Method: SW846 8015 | Matrix: SO |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3921-1 | BH24348.D | 101.0 |
| MC3921-2 | BH24373.D | 85.0 |
| GBH1337-BSP | BH24331.D | 87.0 |
| GBH1337-MB | BH24330.D | 88.0 |
| GBH1339-BSP | BH24360.D | 92.0 |
| GBH1339-MB | BH24359.D | 90.0 |
| MC3921-2MS | BH24374.D | 88.0 |
| MC3921-2MSD | BH24375.D | 83.0 |
| MC4079-11MS | BH24338.D | 88.0 |
| MC4079-11MSD | BH24339.D | 85.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1337-CC1043 | Injection Date: | 10/04/11 |
| Lab File ID: | BH24329.D | Injection Time: | 12:45 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1337-MB | BH24330.D | 10/04/11 | 13:25 | 32.40 |
| GBH1336-MB | BH24330A.D | 10/04/11 | 13:25 | 32.40 |
| GBH1337-BSP | BH24331.D | 10/04/11 | 14:05 | 32.40 |
| GBH1336-BSP | BH24331A.D | 10/04/11 | 14:05 | 32.40 |
| MC3835-5 | BH24332.D | 10/04/11 | 14:45 | 32.40 |
| MC3835-5MS | BH24333.D | 10/04/11 | 15:24 | 32.40 |
| MC3835-5MSD | BH24334.D | 10/04/11 | 16:04 | 32.40 |
| ZZZZZZ | BH24335.D | 10/04/11 | 16:44 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1336-CC1043 | Injection Date: | 10/04/11 |
| Lab File ID: | BH24329A.D | Injection Time: | 12:45 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1337-MB | BH24330.D | 10/04/11 | 13:25 | 32.40 |
| GBH1336-MB | BH24330A.D | 10/04/11 | 13:25 | 32.40 |
| GBH1337-BSP | BH24331.D | 10/04/11 | 14:05 | 32.40 |
| GBH1336-BSP | BH24331A.D | 10/04/11 | 14:05 | 32.40 |
| MC3835-5 | BH24332.D | 10/04/11 | 14:45 | 32.40 |
| MC3835-5MS | BH24333.D | 10/04/11 | 15:24 | 32.40 |
| MC3835-5MSD | BH24334.D | 10/04/11 | 16:04 | 32.40 |
| ZZZZZZ | BH24335.D | 10/04/11 | 16:44 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, 1L

| | | | |
|---|---|---|---|
| Check Std: | GBH1337-CC1043 | Injection Date: | 10/04/11 |
| Lab File ID: | BH24336.D | Injection Time: | 17:24 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC4079-11 | BH24337.D | 10/04/11 | 18:04 | 32.40 |
| MC4079-11MS | BH24338.D | 10/04/11 | 18:43 | 32.40 |
| MC4079-11MSD | BH24339.D | 10/04/11 | 19:23 | 32.40 |
| ZZZZZZ | BH24340.D | 10/04/11 | 20:03 | 32.39 |
| ZZZZZZ | BH24341.D | 10/04/11 | 20:43 | 32.40 |
| ZZZZZZ | BH24342.D | 10/04/11 | 21:22 | 32.40 |
| ZZZZZZ | BH24343.D | 10/04/11 | 22:02 | 32.40 |
| ZZZZZZ | BH24344.D | 10/04/11 | 22:42 | 32.40 |
| ZZZZZZ | BH24345.D | 10/04/11 | 23:21 | 32.40 |
| ZZZZZZ | BH24346.D | 10/05/11 | 00:01 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1336-CC1043 | Injection Date: | 10/04/11 |
| Lab File ID: | BH24336A.D | Injection Time: | 17:24 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC4079-11 | BH24337.D | 10/04/11 | 18:04 | 32.40 |
| MC4079-11MS | BH24338.D | 10/04/11 | 18:43 | 32.40 |
| MC4079-11MSD | BH24339.D | 10/04/11 | 19:23 | 32.40 |
| ZZZZZZ | BH24340.D | 10/04/11 | 20:03 | 32.39 |
| ZZZZZZ | BH24341.D | 10/04/11 | 20:43 | 32.40 |
| ZZZZZZ | BH24342.D | 10/04/11 | 21:22 | 32.40 |
| ZZZZZZ | BH24343.D | 10/04/11 | 22:02 | 32.40 |
| ZZZZZZ | BH24344.D | 10/04/11 | 22:42 | 32.40 |
| ZZZZZZ | BH24345.D | 10/04/11 | 23:21 | 32.40 |
| ZZZZZZ | BH24346.D | 10/05/11 | 00:01 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1337-CC1043 | Injection Date: | 10/05/11 |
| Lab File ID: | BH24347.D | Injection Time: | 00:41 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3921-1 | BH24348.D | 10/05/11 | 01:20 | 32.39 |
| ZZZZZZ | BH24349.D | 10/05/11 | 02:00 | 32.40 |
| ZZZZZZ | BH24350.D | 10/05/11 | 02:39 | 32.40 |
| ZZZZZZ | BH24351.D | 10/05/11 | 03:19 | 32.40 |
| ZZZZZZ | BH24352.D | 10/05/11 | 03:59 | 32.40 |
| ZZZZZZ | BH24353.D | 10/05/11 | 04:38 | 32.40 |
| ZZZZZZ | BH24354.D | 10/05/11 | 05:18 | 32.40 |
| ZZZZZZ | BH24355.D | 10/05/11 | 05:57 | 32.40 |
| ZZZZZZ | BH24356.D | 10/05/11 | 06:37 | 32.40 |
| ZZZZZZ | BH24357.D | 10/05/11 | 07:16 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1337-CC1043 | Injection Date: | 10/05/11 |
| Lab File ID: | BH24358.D | Injection Time: | 07:56 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1339-MB | BH24359.D | 10/05/11 | 10:27 | 32.40 |
| GBH1338-MB | BH24359A.D | 10/05/11 | 10:27 | 32.40 |
| GBH1338-BSP | BH24360A.D | 10/05/11 | 11:07 | 32.40 |
| GBH1339-BSP | BH24360.D | 10/05/11 | 11:07 | 32.40 |
| MC4127-1 | BH24361.D | 10/05/11 | 11:47 | 32.40 |
| MC4127-1MS | BH24362.D | 10/05/11 | 12:27 | 32.40 |
| MC4127-1MSD | BH24363.D | 10/05/11 | 13:07 | 32.40 |
| ZZZZZZ | BH24365.D | 10/05/11 | 14:27 | 32.40 |
| ZZZZZZ | BH24366.D | 10/05/11 | 15:07 | 32.40 |
| ZZZZZZ | BH24367.D | 10/05/11 | 15:47 | 32.40 |
| MC3921-3 | BH24368.D | 10/05/11 | 16:27 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

6.5.6

# GC Surrogate Retention Time Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1338-CC1043 | Injection Date: | 10/05/11 |
| Lab File ID: | BH24358A.D | Injection Time: | 07:56 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1339-MB | BH24359.D | 10/05/11 | 10:27 | 32.40 |
| GBH1338-MB | BH24359A.D | 10/05/11 | 10:27 | 32.40 |
| GBH1338-BSP | BH24360A.D | 10/05/11 | 11:07 | 32.40 |
| GBH1339-BSP | BH24360.D | 10/05/11 | 11:07 | 32.40 |
| MC4127-1 | BH24361.D | 10/05/11 | 11:47 | 32.40 |
| MC4127-1MS | BH24362.D | 10/05/11 | 12:27 | 32.40 |
| MC4127-1MSD | BH24363.D | 10/05/11 | 13:07 | 32.40 |
| ZZZZZZ | BH24365.D | 10/05/11 | 14:27 | 32.40 |
| ZZZZZZ | BH24366.D | 10/05/11 | 15:07 | 32.40 |
| ZZZZZZ | BH24367.D | 10/05/11 | 15:47 | 32.40 |
| MC3921-3 | BH24368.D | 10/05/11 | 16:27 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1339-CC1043 | Injection Date: | 10/05/11 |
| Lab File ID: | BH24358B.D | Injection Time: | 07:56 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1339-MB | BH24359.D | 10/05/11 | 10:27 | 32.40 |
| GBH1338-MB | BH24359A.D | 10/05/11 | 10:27 | 32.40 |
| GBH1339-BSP | BH24360.D | 10/05/11 | 11:07 | 32.40 |
| GBH1338-BSP | BH24360A.D | 10/05/11 | 11:07 | 32.40 |
| MC4127-1 | BH24361.D | 10/05/11 | 11:47 | 32.40 |
| MC4127-1MS | BH24362.D | 10/05/11 | 12:27 | 32.40 |
| MC4127-1MSD | BH24363.D | 10/05/11 | 13:07 | 32.40 |
| ZZZZZZ | BH24365.D | 10/05/11 | 14:27 | 32.40 |
| ZZZZZZ | BH24366.D | 10/05/11 | 15:07 | 32.40 |
| ZZZZZZ | BH24367.D | 10/05/11 | 15:47 | 32.40 |
| MC3921-3 | BH24368.D | 10/05/11 | 16:27 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

6.5.8

6

# GC Surrogate Retention Time Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1339-CC1043 | Injection Date: | 10/05/11 |
| Lab File ID: | BH24369.D | Injection Time: | 17:07 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BH24370.D | 10/05/11 | 17:47 | 32.39 |
| ZZZZZZ | BH24371.D | 10/05/11 | 18:27 | 32.40 |
| ZZZZZZ | BH24372.D | 10/05/11 | 19:06 | 32.40 |
| MC3921-2 | BH24373.D | 10/05/11 | 19:46 | 32.40 |
| MC3921-2MS | BH24374.D | 10/05/11 | 20:25 | 32.39 |
| MC3921-2MSD | BH24375.D | 10/05/11 | 21:05 | 32.40 |
| ZZZZZZ | BH24376.D | 10/05/11 | 21:44 | 32.40 |
| ZZZZZZ | BH24377.D | 10/05/11 | 22:24 | 32.39 |
| ZZZZZZ | BH24378.D | 10/05/11 | 23:03 | 32.39 |
| ZZZZZZ | BH24379.D | 10/05/11 | 23:42 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

6.5.9

6

# GC Surrogate Retention Time Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1338-CC1043 | Injection Date: | 10/05/11 |
| Lab File ID: | BH24369A.D | Injection Time: | 17:07 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BH24370.D | 10/05/11 | 17:47 | 32.39 |
| ZZZZZZ | BH24371.D | 10/05/11 | 18:27 | 32.40 |
| ZZZZZZ | BH24372.D | 10/05/11 | 19:06 | 32.40 |
| MC3921-2 | BH24373.D | 10/05/11 | 19:46 | 32.40 |
| MC3921-2MS | BH24374.D | 10/05/11 | 20:25 | 32.39 |
| MC3921-2MSD | BH24375.D | 10/05/11 | 21:05 | 32.40 |
| ZZZZZZ | BH24376.D | 10/05/11 | 21:44 | 32.40 |
| ZZZZZZ | BH24377.D | 10/05/11 | 22:24 | 32.39 |
| ZZZZZZ | BH24378.D | 10/05/11 | 23:03 | 32.39 |
| ZZZZZZ | BH24379.D | 10/05/11 | 23:42 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

6.5.10

6

New England ACCUTEST LABORATORIES

## GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26402-MB | BG31482.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1128 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3921-1, MC3921-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 16 | 12 | mg/kg | |
| | TPH (> C28-C40) | ND | 16 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 93% | 24-147% |

# Method Blank Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26420-MB | BG31379.D | 1 | 10/04/11 | KD | 09/28/11 | OP26420 | GBG1122 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3921-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 0.20 | 0.14 | mg/l | |
| | TPH (> C28-C40) | ND | 0.20 | 0.14 | mg/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 72% | 33-150% |

# Blank Spike Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26402-BS | BG31484.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1128 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3921-1, MC3921-2

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 164 | 157 | 96 | 63-139 |
| | TPH (>C28-C40) | 164 | 120 | 73 | 46-103 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 94% | 24-147% |

7.2.1

7

# Blank Spike Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26420-BS | BG31381.D | 1 | 10/04/11 | KD | 09/28/11 | OP26420 | GBG1122 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3921-3

| CAS No. | Compound | Spike mg/l | BSP mg/l | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 2.5 | 2.51 | 100 | 46-120 |
| | TPH (>C28-C40) | 2.5 | 2.00 | 80 | 46-120 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 82% | 33-150% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26402-MS | BG31495.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1129 |
| OP26402-MSD | BG31497.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1129 |
| MC3921-2 | BG31499.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1129 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3921-1, MC3921-2

| CAS No. | Compound | MC3921-2 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 185 | 133 | 72 | 207 | 109 | 44 | 8-154/127 |
| | TPH (>C28-C40) | ND | | 185 | 97.3 | 53 | 153 | 80 | 45* [a] | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3921-2 | Limits |
|---|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 75% | 0%* [b] | 110% | 24-147% |

(a) Outside control limits due to possible matrix interference.
(b) Surrogate standard not added.Range recovery satisfactory.

7.3.1

7

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26420-MS | BG31383.D | 1 | 10/04/11 | KD | 09/28/11 | OP26420 | GBG1122 |
| OP26420-MSD | BG31385.D | 1 | 10/04/11 | KD | 09/28/11 | OP26420 | GBG1122 |
| MC4057-2 | BG31387.D | 1 | 10/04/11 | KD | 09/28/11 | OP26420 | GBG1122 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3921-3

| CAS No. | Compound | MC4057-2 mg/l | Q | Spike mg/l | MS mg/l | MS % | MSD mg/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 2.5 | 2.67 | 107 | 2.19 | 88 | 20 | 45-120/25 |
| | TPH (>C28-C40) | ND | | 2.5 | 2.12 | 85 | 1.72 | 69 | 21 | 45-120/25 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4057-2 | Limits |
|---|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 86% | 74% | 86% | 33-150% |

7.3.2

7

# Semivolatile Surrogate Recovery Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3921-3 | BG31418.D | 56.0 |
| OP26420-BS | BG31381.D | 82.0 |
| OP26420-MB | BG31379.D | 72.0 |
| OP26420-MS | BG31383.D | 86.0 |
| OP26420-MSD | BG31385.D | 74.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 1-Chlorooctadecane | 33-150% |

(a) Recovery from GC signal #1

# Semivolatile Surrogate Recovery Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3921-1 | BG31523.D | 98.0 |
| MC3921-1 | BG31498.D | 91.0 |
| MC3921-2 | BG31499.D | 110.0 |
| OP26402-BS | BG31484.D | 94.0 |
| OP26402-MB | BG31482.D | 93.0 |
| OP26402-MS | BG31495.D | 75.0 |
| OP26402-MSD | BG31497.D | 0.0* [b] |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 1-Chlorooctadecane | 24-147% |

(a) Recovery from GC signal #1
(b) Surrogate standard not added.Range recovery satisfactory.

# GC Surrogate Retention Time Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1122-ICC1122 | Injection Date: | 10/03/11 |
| Lab File ID: | BG31373.D | Injection Time: | 21:42 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 17.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26420-MB | BG31379.D | 10/04/11 | 00:20 | 17.39 |
| OP26420-BS | BG31381.D | 10/04/11 | 01:17 | 17.39 |
| OP26420-MS | BG31383.D | 10/04/11 | 02:13 | 17.39 |
| OP26420-MSD | BG31385.D | 10/04/11 | 03:09 | 17.39 |
| MC4057-2 | BG31387.D | 10/04/11 | 04:13 | 17.39 |
| GBG1122-ECC112 | BG31393.D | 10/04/11 | 08:35 | 17.39 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.1

7

# GC Surrogate Retention Time Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1125-ICC1125 | Injection Date: | 10/04/11 |
| Lab File ID: | BG31414.D | Injection Time: | 22:06 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 16.31 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31417.D | 10/05/11 | 00:24 | 16.31 |
| MC3921-3 | BG31418.D | 10/05/11 | 01:11 | 16.30 |
| ZZZZZZ | BG31419.D | 10/05/11 | 01:57 | 16.30 |
| OP26384-MB | BG31420.D | 10/05/11 | 02:43 | 16.31 |
| OP26384-BS | BG31421.D | 10/05/11 | 03:30 | 16.3I |
| OP26384-MS | BG31422.D | 10/05/11 | 04:16 | 16.31 |
| OP26384-MSD | BG31423.D | 10/05/11 | 05:02 | 16.31 |
| MC3836-3 | BG31424.D | 10/05/11 | 05:49 | 16.31 |
| ZZZZZZ | BG31425.D | 10/05/11 | 06:35 | 16.31 |
| ZZZZZZ | BG31426.D | 10/05/11 | 07:22 | 16.31 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.2

7

# GC Surrogate Retention Time Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1128-CC1125 | Injection Date: | 10/06/11 |
| Lab File ID: | BG31480.D | Injection Time: | 13:43 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 16.31 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26402-MB | BG31482.D | 10/06/11 | 15:03 | 16.32 |
| OP26402-BS | BG31484.D | 10/06/11 | 15:49 | 16.33 |
| ZZZZZZ | BG31486.D | 10/06/11 | 16:35 | 16.32 |
| ZZZZZZ | BG31488.D | 10/06/11 | 17:22 | 16.32 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.3

7

# GC Surrogate Retention Time Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1129-ICC1129 | Injection Date: | 10/06/11 |
| Lab File ID: | BG31489.D | Injection Time: | 17:22 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 15.61 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31490.D | 10/06/11 | 18:09 | 16.32 |
| ZZZZZZ | BG31492.D | 10/06/11 | 18:56 | 16.32 |
| ZZZZZZ | BG31494.D | 10/06/11 | 19:43 | 16.32 |
| OP26402-MS | BG31495.D | 10/06/11 | 19:43 | 15.61 |
| ZZZZZZ | BG31496.D | 10/06/11 | 20:30 | 16.32 |
| OP26402-MSD | BG31497.D | 10/06/11 | 20:30 | 15.67 |
| MC3921-1 | BG31498.D | 10/06/11 | 21:17 | 16.35 |
| MC3921-2 | BG31499.D | 10/06/11 | 21:17 | 15.62 |
| ZZZZZZ | BG31500.D | 10/06/11 | 22:03 | 16.32 |
| ZZZZZZ | BG31501.D | 10/06/11 | 22:03 | 15.62 |
| GBG1128-ECC112 | BG31502.D | 10/06/11 | 22:50 | 16.31 |
| GBG1129-ECC112 | BG31513.D | 10/07/11 | 02:43 | 15.61 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1130-CC1129 | Injection Date: | 10/07/11 |
| Lab File ID: | BG31515.D | Injection Time: | 08:59 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 15.60 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31517.D | 10/07/11 | 10:04 | 15.59 |
| ZZZZZZ | BG31519.D | 10/07/11 | 11:19 | 15.60 |
| ZZZZZZ | BG31521.D | 10/07/11 | 12:06 | 15.60 |
| MC3921-1 | BG31523.D | 10/07/11 | 13:02 | 15.60 |
| GBG1130-ECC1128 | BG31525.D | 10/07/11 | 13:49 | 15.61 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.5

7

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## General Chemistry

## QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC3921
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC3921-1 Analyzed: 28-SEP-11 by BF Method: SM21 2540 B MOD.
ClientID: SVE 34 (32-34) 092311

| | | |
|---|---|---|
| Wet Weight (Total) | 31.566 | g |
| Tare Weight | 18.809 | g |
| Dry Weight (Total) | 31.267 | g |
| Solids, Percent | 97.7 | % |

Sample: MC3921-2 Analyzed: 28-SEP-11 by BF Method: SM21 2540 B MOD.
ClientID: VMP 46 (10-11) 092311

| | | |
|---|---|---|
| Wet Weight (Total) | 26.016 | g |
| Tare Weight | 17.051 | g |
| Dry Weight (Total) | 24.797 | g |
| Solids, Percent | 86.4 | % |

8.1

8

# SVE Install 2011 Data Review

**Laboratory SDG: MC3922**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 1/13/2012**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| SVE-35 (16-18) 092311 | SVE-36-2 (10-12.5) 092311 |
| SVE-3 (38-40) 092311 | VMP-46 (10-11) 092311-Dup |
| SVE-36 (17.5-20) 092311 EB | TB-092311 |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes; however, the filed duplicate pair of VMP-46 (10-11) 092311/VMP-46 (10-11) 092311 Dup was separated into two SDGs, SDGs MC3921 and SDG MC3922.

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS/LCSD recoveries were outside evaluation criteria. This issue is addressed further in the appropriate sections below.

The cooler receipt form did not mention any problems or discrepancies. However, the trip blank ID format in TB-092311 was amended to six digit format for consistency.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSK1842-BS | VOCs | Isopropylbenzene | **138** | NA | 70-130 |
| MSK1842-BS | VOCs | Vinyl chloride | **60** | NA | 70-130 |
| MSP1816-BS | VOCs | Acetone | **133** | NA | 70-130 |

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSP1816-BS | VOCs | Acrolein | **284** | NA | 70-130 |
| MSM1417-BS/BSD | VOCs | Acetone | **137/149** | 8 | 70-130/25 |
| MSM1417-BS/BSD | VOCs | Acrolein | **137/132** | 4 | 70-130/25 |
| MSM1417-BS/BSD | VOCs | Acrylonitrile | **368/360** | 2 | 70-130/25 |
| MSM1417-BS/BSD | VOCs | 2-Chloroethyl vinyl ether | **32/34** | 8 | 70-130/25 |
| MSM1417-BS/BSD | VOCs | 1,4-Dioxane | **54/66** | 20 | 70-130/25 |
| MSM1417-BS/BSD | VOCs | Hexachlorobutadiene | **144/147** | 2 | 70-130/25 |
| MSM1417-BS/BSD | VOCs | 2-Hexanone | 124/**132** | 6 | 70-130/25 |
| MSM1417-BS/BSD | VOCs | 1,1,2,2-Tetrachloroethane | 71/**67** | 5 | 70-130/25 |
| MSM1417-BS/BSD | VOCs | Vinyl acetate | **22/18** | 17 | 70-130/25 |

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS MSM1417-BS/BSD was associated with equipment blank SVE-36 (17.5-20) 092311 EB and trip blank TB-092311. Equipment and trip blanks are quality control samples and are not qualified.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| SVE-35 (16-18) 092311 | VOCs | Isopropylbenzene | **J** |
| SVE-35 (16-18) 092311 | VOCs | Vinyl chloride | **UJ** |
| SVE-36-2 (10-12.5) 092311 | VOCs | Isopropylbenzene | **J** |
| SVE-36-2 (10-12.5) 092311 | VOCs | Vinyl chloride | **UJ** |
| SVE-3 (38-40) 092311 | VOCs | Vinyl chloride | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

No

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

Yes

| Field ID | Field Duplicate ID |
|---|---|
| VMP-46 (10-11) 092311 | VMP-46 (10-11) 092311-Dup |

*Were field duplicates within evaluation criteria?*

Yes

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

No

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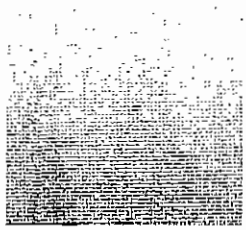
11/23/11





Technical Report for

Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC3922

Sampling Date: 09/23/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **104**

Reviewed on 1/13/2012

Reza Rand
Lab Director

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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1

# Sample Summary

Shell Oil

Job No: MC3922

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| MC3922-1 | 09/23/11 | 11:40 | SWLR | 09/24/11 | SO | Soil | SVE-35 (16-18) 092311 |
| MC3922-2 | 09/23/11 | 14:05 | SWLR | 09/24/11 | SO | Soil | SVE-36-2 (10-12.5) 092311 |
| MC3922-3 | 09/23/11 | 12:05 | SWLR | 09/24/11 | SO | Soil | SVE-3 (38-40) 092311 |
| MC3922-4 | 09/23/11 | 10:05 | SWLR | 09/24/11 | SO | Soil | VMP 46 (10-11) 092311 |
| MC3922-5 | 09/23/11 | 14:25 | SWLR | 09/24/11 | AQ | Equipment Blank | SVE 36 (17.5-20) 092311 EB |
| MC3922-6 | 09/23/11 | 16:00 | SWLR | 09/24/11 | AQ | Trip Blank Water | TRIP BLANK 092311 TB |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

ACCUTEST Laboratories

# SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Shell Oil **Job No** MC3922

**Site:** URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Ra **Report Date** 10/11/2011 4:09:24 PM

5 Sample(s), 1 Trip Blank were collected on 09/23/2011 and were received at Accutest on 09/24/2011 properly preserved, at 2.6 Deg. C and intact. These Samples received an Accutest job number of MC3922. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSM1417

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3904-15MS, MC3904-15MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 1,4-Dioxane, 2-Chloroethyl vinyl ether, Acetone, Acrolein, Hexachlorobutadiene, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 2-Chloroethyl vinyl ether, Acrolein, Hexachlorobutadiene, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2-Chloroethyl vinyl ether, Acrolein, Carbon tetrachloride, Hexachlorobutadiene, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSM1417-BS/MS/MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.
- Blank Spike Duplicate Recovery(s) for 1,4-Dioxane, 2-Chloroethyl vinyl ether, Acetone, Acrolein, 2-Hexanone, 1,1,2,2-Tetrachloroethane, Hexachlorobutadiene, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.

**Matrix** SO **Batch ID:** MSK1842

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC4011-6MS, MC4011-6MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Isopropylbenzene, Vinyl chloride are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for Bromomethane, Chloromethane, Dichlorodifluoromethane, Vinyl chloride are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for Bromomethane, Chloromethane, Dichlorodifluoromethane, Vinyl Acetate, Vinyl chloride are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

**Matrix** SO **Batch ID:** MSP1816

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC3921-2MS, MC3921-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for Acetone are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Acetone are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- Matrix Spike Duplicate Recovery(s) for 1,1,2,2-Tetrachloroethane, 1,1-Dichloroethene, 1,2,3-Trichloropropane, 1,2-Dibromo-3-chloropropane, 1,4-Dioxane, 2-Butanone (MEK), 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Dichlorodifluoromethane, Isopropylbenzene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

## Volatiles by GCMS By Method SW846 8260B

| Matrix SO | Batch ID: MSP1816 |
|---|---|

- MSP1816-BS for Acrolein: Outside eontrol limits. Associated samples are non-deteet for this compound.
- MS/MSD Reeovery(s) for Acrolein, Acrylonitrile are outside control limits. Associatcd samples are non-detect for this compound.
- MC3921-2MS for 1,2,3-Trichloropropane, 1,4-Dioxane, Dichlorodifluoromethane is outside control limits due to possible matrix interferenee. Refer to Blank Spike.

## Volatiles by GC By Method SW846 8015

| Matrix AQ | Batch ID: GBH1336 |
|---|---|

- All samples were analyzed within the reeommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3835-5MS, MC3835-5MSD werc used as the QC samples indicated.

| Matrix SO | Batch ID: GBH1337 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC4079-11MS, MC4079-11MSD were used as thc QC samples indicated.
- All method blanks for this batch meet method specifie criteria.

## Extractables by GC By Method SW846-8015

| Matrix AQ | Batch ID: OP26420 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding timc.
- Sample(s) MC4057-2MS, MC4057-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

| Matrix SO | Batch ID: OP26402 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommendcd method holding time.
- All method blanks for this batch mcet method specific criteria.
- Sample(s) MC3921-2MS, MC3921-2MSD werc used as the QC samples indicated.
- RPD of OP26402-MSD for TPH (>C28-C40): Outside control limits due to possible matrix interference.
- OP26402-MSD for 1-Chlorooctadecanc: Surrogate standard not addcd.Range rccovery satisfactory.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN36317 |
|---|---|

- Sample(s) MC3921-2DUP werc used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Dirctor or assignee as verified by the signature on the cover page has authorized the release of this report(MC3922).

New England ACCUTEST LABORATORIES

## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | SVE-35 (16-18) 092311 | | |
| **Lab Sample ID:** | MC3922-1 | **Date Sampled:** | 09/23/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/24/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | 88.3 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55141.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.87 g | 10.0 ml | 100 ul |
| Run #2 | | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 610 | 140 | ug/kg | |
| 107-02-8 | Acrolein | ND | 3100 | 2100 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 610 | 250 | ug/kg | |
| 71-43-2 | Benzene | ND | 61 | 15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 610 | 23 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 610 | 130 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 250 | 26 | ug/kg | |
| 75-25-2 | Bromoform | ND | 250 | 58 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 250 | 83 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 610 | 150 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 164 | 610 | 160 | ug/kg | J |
| 135-98-8 | sec-Butylbenzene | 155 | 610 | 20 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 610 | 80 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 610 | 120 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 250 | 28 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 250 | 12 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 610 | 32 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 610 | 610 | ug/kg | |
| 67-66-3 | Chloroform | ND | 250 | 18 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 610 | 27 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 610 | 17 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 610 | 140 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 610 | 610 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 250 | 80 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 250 | 24 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 250 | 18 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 250 | 18 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 250 | 17 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 250 | 42 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 250 | 19 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 250 | 18 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 250 | 39 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.1

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-35 (16-18) 092311 | | |
| Lab Sample ID: | MC3922-1 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | 88.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 250 | 33 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 250 | 31 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 250 | 28 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 610 | 140 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 610 | 23 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 610 | 24 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 250 | 120 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 250 | 84 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 3100 | 3100 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 610 | 380 | ug/kg | |
| 100-41-4 | Ethylbenzene | 161 | 250 | 16 | ug/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 610 | 610 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 610 | 130 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 242 | 610 | 20 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 71.3 | 610 | 20 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 250 | 76 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 610 | 100 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 610 | 38 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 250 | 44 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 610 | 610 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 300 | 610 | 20 | ug/kg | J |
| 100-42-5 | Styrene | ND | 610 | 61 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 610 | 120 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 250 | 22 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 250 | 21 | ug/kg | |
| 108-88-3 | Toluene | ND | 610 | 22 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 610 | 140 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 610 | 610 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 250 | 22 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 250 | 31 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 250 | 24 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 250 | 110 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 610 | 26 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 235 | 610 | 19 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 610 | 22 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 610 | 140 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 250 | 79 | ug/kg | UJ |
| | m,p-Xylene | 403 | 250 | 31 | ug/kg | |
| 95-47-6 | o-Xylene | 60.5 | 250 | 23 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 463 | 250 | 15 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-35 (16-18) 092311 | | |
| Lab Sample ID: | MC3922-1 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | 88.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 107% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 102% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 108% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-35 (16-18) 092311 | | |
| Lab Sample ID: | MC3922-1 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8015 | Percent Solids: | 88.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24354.D | 1 | 10/05/11 | WS | n/a | n/a | GBH1337 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.66 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 288 | 13 | 2.4 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 94% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-35 (16-18) 092311 | | |
| Lab Sample ID: | MC3922-1 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 88.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31507.D | 1 | 10/07/11 | KD | 09/27/11 | OP26402 | GBG1129 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.3 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 143 | 19 | 14 | mg/kg | |
| | TPH (>C28-C40) | 113 | 19 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 100% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-36-2 (10-12.5) 092311 | | |
| Lab Sample ID: | MC3922-2 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | 92.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55142.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.67 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 600 | 140 | ug/kg | |
| 107-02-8 | Acrolein | ND | 3000 | 2000 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 600 | 240 | ug/kg | |
| 71-43-2 | Benzene | ND | 60 | 15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 600 | 23 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 600 | 120 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 240 | 25 | ug/kg | |
| 75-25-2 | Bromoform | ND | 240 | 57 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 240 | 81 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 600 | 140 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 600 | 150 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 64.4 | 600 | 20 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 600 | 78 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 600 | 120 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 240 | 27 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 240 | 11 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 600 | 31 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 600 | 600 | ug/kg | |
| 67-66-3 | Chloroform | ND | 240 | 18 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 600 | 26 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 600 | 17 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 600 | 130 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 600 | 600 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 240 | 78 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 240 | 23 | ug/kg | |
| 95-50-I | 1,2-Dichlorobenzene | ND | 240 | 18 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 240 | 17 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 240 | 17 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 240 | 41 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 240 | 18 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 240 | 17 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 240 | 38 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.2

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-36-2 (10-12.5) 092311 | | |
| Lab Sample ID: | MC3922-2 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | 92.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 240 | 32 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 240 | 30 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 240 | 27 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 600 | 140 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 600 | 22 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 600 | 23 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 240 | 120 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 240 | 82 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 3000 | 3000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 600 | 370 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 240 | 16 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 600 | 600 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 600 | 130 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 83.2 | 600 | 19 | ug/kg | JJ |
| 99-87-6 | p-Isopropyltolueue | 23.4 | 600 | 19 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 240 | 74 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 600 | 100 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 600 | 37 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 240 | 43 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 600 | 600 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 102 | 600 | 19 | ug/kg | J |
| 100-42-5 | Styrene | ND | 600 | 60 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 600 | 120 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 240 | 21 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 240 | 20 | ug/kg | |
| 108-88-3 | Toluene | ND | 600 | 21 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 600 | 130 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 600 | 600 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 240 | 22 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 240 | 31 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 240 | 23 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 240 | 110 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 600 | 25 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 600 | 19 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 600 | 22 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 600 | 140 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 240 | 77 | ug/kg | UJ |
| | m,p-Xylene | ND | 240 | 30 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 240 | 22 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 240 | 15 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | SVE-36-2 (10-12.5) 092311 | | |
| **Lab Sample ID:** | MC3922-2 | **Date Sampled:** | 09/23/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/24/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | 92.4 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

**VOA Special List**

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 106% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 103% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 109% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-36-2 (10-12.5) 092311 | | |
| Lab Sample ID: | MC3922-2 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8015 | Percent Solids: | 92.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24355.D | 1 | 10/05/11 | WS | n/a | n/a | GBH1337 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.28 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 11.3 | 13 | 2.5 | mg/kg | J |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 92% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.2

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-36-2 (10-12.5) 092311 | | |
| Lab Sample ID: | MC3922-2 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 92.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31500.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1128 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.1 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 86.4 | 18 | 14 | mg/kg | |
| | TPH (> C28-C40) | 47.6 | 18 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 85% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-3 (38-40) 092311 | | |
| Lab Sample ID: | MC3922-3 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | 85.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55143.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.11 g | 10.0 ml | 100 ul |
| Run #2 | | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 620 | 140 | ug/kg | |
| 107-02-8 | Acrolein | ND | 3100 | 2100 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 620 | 250 | ug/kg | |
| 71-43-2 | Benzene | ND | 62 | 15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 620 | 24 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 620 | 130 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 250 | 26 | ug/kg | |
| 75-25-2 | Bromoform | ND | 250 | 58 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 250 | 84 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 620 | 150 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 620 | 160 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 620 | 20 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 620 | 81 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 620 | 120 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 250 | 28 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 250 | 12 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 620 | 32 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 620 | 620 | ug/kg | |
| 67-66-3 | Chloroform | ND | 250 | 18 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 620 | 27 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 620 | 17 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 620 | 140 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 620 | 620 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 250 | 81 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 250 | 24 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 250 | 19 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 250 | 18 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 250 | 17 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 250 | 42 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 250 | 19 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 250 | 18 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 250 | 39 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-3 (38-40) 092311 | | |
| Lab Sample ID: | MC3922-3 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | 85.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 250 | 33 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 250 | 31 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 250 | 28 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 620 | 140 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 620 | 23 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 620 | 24 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 250 | 120 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 250 | 85 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 3100 | 3100 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 620 | 390 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 250 | 16 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 620 | 620 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 620 | 130 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 620 | 20 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 620 | 20 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 250 | 77 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 620 | 100 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 620 | 38 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 250 | 45 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 620 | 620 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 620 | 20 | ug/kg | |
| 100-42-5 | Styrene | ND | 620 | 62 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 620 | 120 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 250 | 22 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 250 | 21 | ug/kg | |
| 108-88-3 | Toluene | ND | 620 | 22 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 620 | 140 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 620 | 620 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 250 | 23 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 250 | 31 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 250 | 24 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 250 | 110 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 620 | 26 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 44.2 | 620 | 19 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 44.9 | 620 | 22 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 620 | 150 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 250 | 80 | ug/kg | UJ |
| | m,p-Xylene | ND | 250 | 31 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 250 | 23 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 250 | 16 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-3 (38-40) 092311 | | |
| Lab Sample ID: | MC3922-3 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | 85.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 | 170 East Rand Ave. Hartford, IL | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 105% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 110% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-3 (38-40) 092311 | | |
| Lab Sample ID: | MC3922-3 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8015 | Percent Solids: | 85.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24356.D | 1 | 10/05/11 | WS | n/a | n/a | GBH1337 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.72 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 13 | 2.5 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 89% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-3 (38-40) 092311 | | |
| Lab Sample ID: | MC3922-3 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 85.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31486.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1128 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.3 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 19 | 15 | mg/kg | |
| | TPH (>C28-C40) | ND | 19 | 15 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 88% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP 46 (10-11) 092311 | | |
| Lab Sample ID: | MC3922-4 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | 88.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P55480.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.31 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 6.5 | 1.5 | ug/kg | |
| 107-02-8 | Acrolein | ND | 33 | 22 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6.5 | 2.6 | ug/kg | |
| 71-43-2 | Benzene | 8.5 | 0.65 | 0.16 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 6.5 | 0.25 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6.5 | 1.4 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.6 | 0.27 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.6 | 0.62 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.6 | 0.88 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 6.5 | 1.6 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 14.3 | 6.5 | 1.7 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 2.3 | 6.5 | 0.22 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 6.5 | 0.85 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 6.5 | 1.3 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.6 | 0.29 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.6 | 0.12 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6.5 | 0.34 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6.5 | 6.5 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.6 | 0.19 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6.5 | 0.28 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 6.5 | 0.18 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6.5 | 1.5 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6.5 | 6.5 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.6 | 0.85 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.6 | 0.25 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.6 | 0.20 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.6 | 0.19 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.6 | 0.18 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.6 | 0.45 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.6 | 0.20 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.6 | 0.19 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.6 | 0.42 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP 46 (10-11) 092311 | | |
| Lab Sample ID: | MC3922-4 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | 88.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.6 | 0.35 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.6 | 0.33 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.6 | 0.30 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6.5 | 1.5 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6.5 | 0.24 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6.5 | 0.25 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.6 | 1.3 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.6 | 0.90 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 33 | 33 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6.5 | 4.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | 12.7 | 2.6 | 0.17 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 6.5 | 6.5 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6.5 | 1.4 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 2.0 | 6.5 | 0.21 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | ND | 6.5 | 0.21 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.6 | 0.81 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6.5 | 1.1 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6.5 | 0.40 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.6 | 0.47 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 6.5 | 6.5 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 4.0 | 6.5 | 0.21 | ug/kg | J |
| 100-42-5 | Styrene | ND | 6.5 | 0.65 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6.5 | 1.3 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.6 | 0.23 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.6 | 0.22 | ug/kg | |
| 108-88-3 | Toluene | 9.3 | 6.5 | 0.23 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6.5 | 1.4 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6.5 | 6.5 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.6 | 0.24 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.6 | 0.33 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.6 | 0.26 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.6 | 1.2 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6.5 | 0.27 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 3.2 | 6.5 | 0.21 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 3.3 | 6.5 | 0.24 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 6.5 | 1.5 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.6 | 0.84 | ug/kg | |
| | m,p-Xylene | 7.3 | 2.6 | 0.33 | ug/kg | |
| 95-47-6 | o-Xylene | 2.8 | 2.6 | 0.24 | ug/kg | |
| 1330-20-7 | Xylene (total) | 10.1 | 2.6 | 0.16 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP 46 (10-11) 092311 | | |
| Lab Sample ID: | MC3922-4 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | 88.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 98% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 118% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 118% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP 46 (10-11) 092311 | | |
| Lab Sample ID: | MC3922-4 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846 8015 | Percent Solids: | 88.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24357.D | 1 | 10/05/11 | WS | n/a | n/a | GBH1337 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.89 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 15 | 2.9 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 90% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP 46 (10-11) 092311 | | |
| Lab Sample ID: | MC3922-4 | Date Sampled: | 09/23/11 |
| Matrix: | SO - Soil | Date Received: | 09/24/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 88.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31496.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1128 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.3 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 18 | 14 | mg/kg | |
| | TPH (>C28-C40) | ND | 18 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 92% | | 24-147% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE 36 (17.5-20) 092311 EB | | |
| Lab Sample ID: | MC3922-5 | Date Sampled: | 09/23/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M43835.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | SVE 36 (17.5-20) 092311 EB | | |
| **Lab Sample ID:** | MC3922-5 | **Date Sampled:** | 09/23/11 |
| **Matrix:** | AQ - Equipment Blank | **Date Received:** | 09/24/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | n/a |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE 36 (17.5-20) 092311 EB | | |
| Lab Sample ID: | MC3922-5 | Date Sampled: | 09/23/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 92% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 91% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | SVE 36 (17.5-20) 092311 EB | | |
| **Lab Sample ID:** | MC3922-5 | **Date Sampled:** | 09/23/11 |
| **Matrix:** | AQ - Equipment Blank | **Date Received:** | 09/24/11 |
| **Method:** | SW846 8015 | **Percent Solids:** | n/a |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24335.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1336 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 0.10 | 0.070 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 84% | | 60-126% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE 36 (17.5-20) 092311 EB | | |
| Lab Sample ID: | MC3922-5 | Date Sampled: | 09/23/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/24/11 |
| Method: | SW846-8015 SW846 3510C | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31419.D | 1 | 10/05/11 | KD | 09/28/11 | OP26420 | GBG1125 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 1000 ml | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 0.20 | 0.14 | mg/l | |
| | TPH (>C28-C40) | ND | 0.20 | 0.14 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 66% | | 33-150% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK 092311 TB | | |
| Lab Sample ID: | MC3922-6 | Date Sampled: | 09/23/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | M43834.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK 092311 TB | | |
| Lab Sample ID: | MC3922-6 | Date Sampled: | 09/23/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TRIP BLANK 092311 TB | | |
| Lab Sample ID: | MC3922-6 | Date Sampled: | 09/23/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/24/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 91% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 90% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES



## Misc. Forms

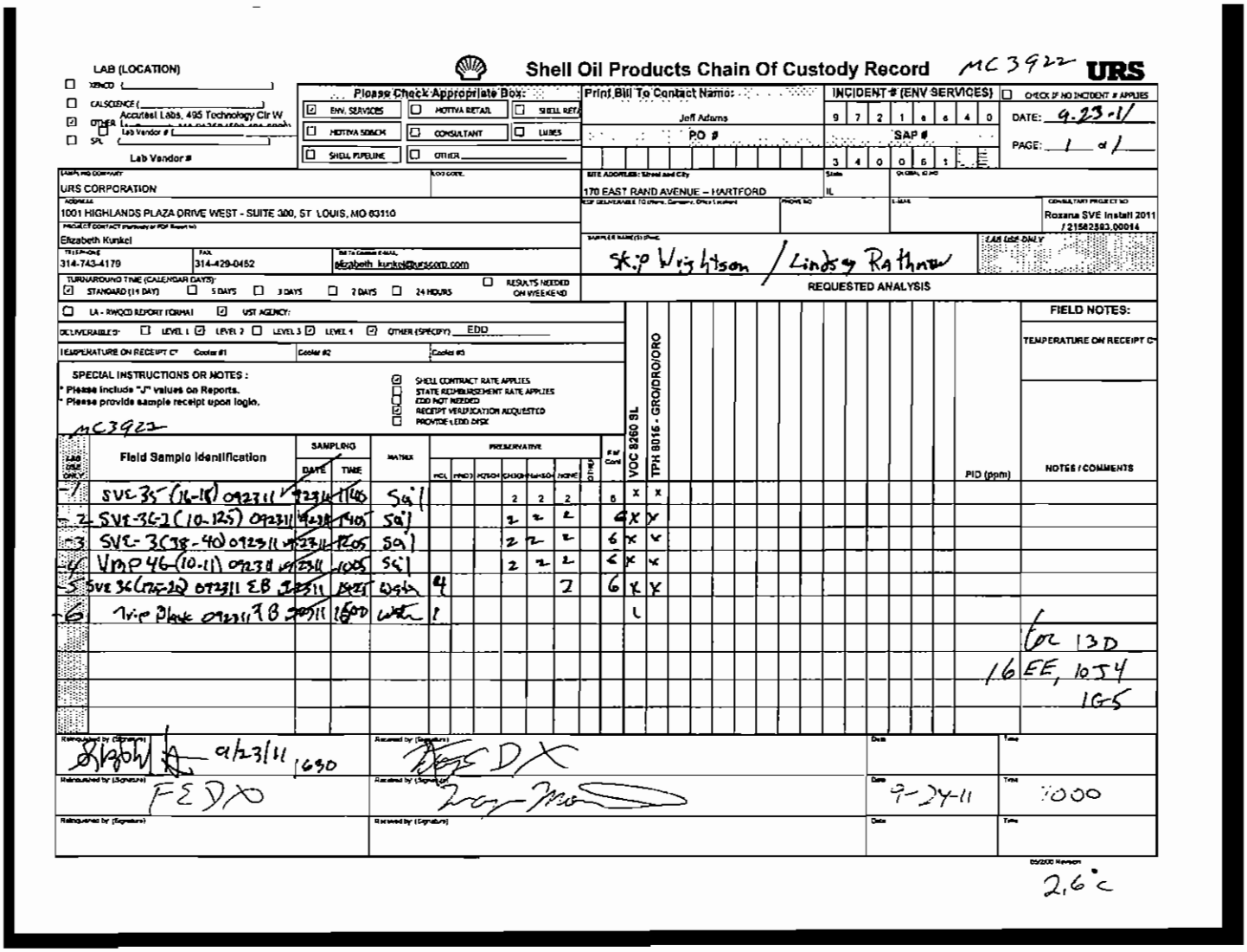
# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

LAB (LOCATION)

☐ XENCO ( )
☐ CALSCIENCE ( )
☑ OTHER Accutest Labs, 495 Technology Ctr W
☐ Lab Vendor # ( )
☐ SPL ( )
Lab Vendor #



# Shell Oil Products Chain Of Custody Record

MC3922 **URS**

Please Check Appropriate Box:
☑ ENV. SERVICES ☐ MOTIVA RETAIL ☐ SHELL RETAIL
☐ MOTIVA SDBCM ☐ CONSULTANT ☐ LUBES
☐ SHELL PIPELINE ☐ OTHER

Print Bill To Contact Name: Jeff Adams
PO #

INCIDENT # (ENV SERVICES): 9 7 2 1 6 6 4 0
SAP #: 3 4 0 0 6 1

☐ CHECK IF NO INCIDENT # APPLIES
DATE: 9-23-11
PAGE: 1 of 1

SAMPLING COMPANY: URS CORPORATION
LOG CODE:
SITE ADDRESS: Street and City: 170 EAST RAND AVENUE – HARTFORD
State: IL
ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST LOUIS, MO 63110
PROJECT CONTACT (Particular or PDF Report to): Elizabeth Kunkel
TELEPHONE: 314-743-4179
FAX: 314-429-0452
DATA CONTACT E-MAIL: elizabeth_kunkel@urscorp.com
SAMPLER NAME(S) (Print): Skip Wrightson / Lindsey Rathnow
CONSULTANT PROJECT NO: Roxana SVE Install 2011 / 21582583.00014
LAB USE ONLY

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

☐ LA - RWQCD REPORT FORMAT ☑ UST AGENCY:
DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD
TEMPERATURE ON RECEIPT C° Cooler #1 Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
* Please include "J" values on Reports.
* Please provide sample receipt upon login.

☑ SHELL CONTRACT RATE APPLIES
☐ STATE REIMBURSEMENT RATE APPLIES
☐ EDD NOT NEEDED
☑ RECEIPT VERIFICATION REQUESTED
☐ PROVIDE LEDD DISK

MC3922

REQUESTED ANALYSIS

FIELD NOTES:
TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE HCL | HNO3 | H2SO4 | CH3OH | NaHSO4 | NONE | OTHER | # of Cont | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | SVE 35 (16-18) 092311 | 9231 | 1140 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -2 | SVE-36-2 (10-125) 092311 | 9231 | 1405 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -3 | SVE-3 (38-40) 092311 | 9231 | 1205 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -4 | VMP 46 (10-11) 092311 | 9231 | 1005 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -5 | SVE 36 (125-20) 092311 EB | 9231 | 1425 | Water | 4 | | | | | 2 | | 6 | X | X | | |
| -6 | Trip Blank 092311 TB | 9231 | 1600 | Water | 1 | | | | | | | | 1 | | | |
| | | | | | | | | | | | | | | | | for 13D |
| | | | | | | | | | | | | | | | | 16 EE, 10J4 |
| | | | | | | | | | | | | | | | | 1G5 |

| Relinquished by (Signature) | Received by (Signature) | Date | Time |
|---|---|---|---|
| [signature] 9/23/11 1630 | [signature] DX | | |
| FEDX | [signature] | 9-24-11 | 1000 |
| | | | |

05/2000 Revision

2.6°C

4.1

4

**MC3922: Chain of Custody**
**Page 1 of 2**

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC3922 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 9/24/2011 Delivery Method: Client Service Action Required at Login: No

Project: HARTFORD No. Coolers: 1 Airbill #'s:

| Cooler Security | Y | or | N | | Y | or | N |
|---|---|---|---|---|---|---|---|
| 1. Custody Seals Present: | ☑ | | ☐ | 3. COC Present: | ☑ | | ☐ |
| 2. Custody Seals Intact: | ☑ | | ☐ | 4. Smpl Dates/Time OK | ☑ | | ☐ |

| Cooler Temperature | Y | or | N |
|---|---|---|---|
| 1. Temp criteria achieved: | ☑ | | ☐ |
| 2. Cooler temp verification: | Infared gun | | |
| 3. Cooler media: | Ice (bag) | | |

| Quality Control Preservatio | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Trip Blank present / cooler: | ☐ | | ☐ | ☑ |
| 2. Trip Blank listed on COC: | ☐ | | ☐ | ☑ |
| 3. Samples preserved properly: | ☑ | | ☐ | |
| 4. VOCs headspace free: | ☐ | | ☐ | ☑ |

| Sample Integrity - Documentation | Y | or | N |
|---|---|---|---|
| 1. Sample labels present on bottles: | ☑ | | ☐ |
| 2. Container labeling complete: | ☑ | | ☐ |
| 3. Sample container label / COC agree: | ☑ | | ☐ |

| Sample Integrity - Condition | Y | or | N |
|---|---|---|---|
| 1. Sample recvd within HT: | ☑ | | ☐ |
| 2. All containers accounted for: | ☑ | | ☐ |
| 3. Condition of sample: | Intact | | |

| Sample Integrity - Instructions | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Analysis requested is clear: | ☑ | | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | | ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ | | ☐ | |
| 4. Compositing instructions clear: | ☐ | | ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ | | ☐ | ☑ |

Comments

Accutest Laboratories
V.508.481.6200
495 Technology Center West, Bldg One
F 508.481.7753
Marlborough, MA
www.accutest.com

4.1

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**MC3922: Chain of Custody**
**Page 2 of 2**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3922

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3922-1 | Collected: 23-SEP-11 11:40 By: SWLR | | Received: 24-SEP-11 By: SAP | | | |
| SVE-35 (16-18) 092311 | | | | | | |
| MC3922-1 | SM21 2540 B MOD. | 28-SEP-11 | BF | | | %SOL |
| MC3922-1 | SW846 8260B | 30-SEP-11 18:27 | GK | | | V8260SL |
| MC3922-1 | SW846 8015 | 05-OCT-11 05:18 | WS | | | V8015GRO |
| MC3922-1 | SW846-8015 | 07-OCT-11 00:23 | KD | 27-SEP-11 | MEW | B8015DROORO |
| MC3922-2 | Collected: 23-SEP-11 14:05 By: SWLR | | Received: 24-SEP-11 By: SAP | | | |
| SVE-36-2 (10-12.5) 092311 | | | | | | |
| MC3922-2 | SM21 2540 B MOD. | 28-SEP-11 | BF | | | %SOL |
| MC3922-2 | SW846 8260B | 30-SEP-11 18:54 | GK | | | V8260SL |
| MC3922-2 | SW846 8015 | 05-OCT-11 05:57 | WS | | | V8015GRO |
| MC3922-2 | SW846-8015 | 06-OCT-11 22:03 | KD | 27-SEP-11 | MEW | B8015DROORO |
| MC3922-3 | Collected: 23-SEP-11 12:05 By: SWLR | | Received: 24-SEP-11 By: SAP | | | |
| SVE-3 (38-40) 092311 | | | | | | |
| MC3922-3 | SM21 2540 B MOD. | 28-SEP-11 | BF | | | %SOL |
| MC3922-3 | SW846 8260B | 30-SEP-11 19:22 | GK | | | V8260SL |
| MC3922-3 | SW846 8015 | 05-OCT-11 06:37 | WS | | | V8015GRO |
| MC3922-3 | SW846-8015 | 06-OCT-11 16:35 | KD | 27-SEP-11 | MEW | B8015DROORO |
| MC3922-4 | Collected: 23-SEP-11 10:05 By: SWLR | | Received: 24-SEP-11 By: SAP | | | |
| VMP 46 (10-11) 092311 | | | | | | |
| MC3922-4 | SM21 2540 B MOD. | 28-SEP-11 | BF | | | %SOL |
| MC3922-4 | SW846 8015 | 05-OCT-11 07:16 | WS | | | V8015GRO |
| MC3922-4 | SW846 8260B | 06-OCT-11 14:09 | AMY | | | V8260SL |
| MC3922-4 | SW846-8015 | 06-OCT-11 20:30 | KD | 27-SEP-11 | MEW | B8015DROORO |
| MC3922-5 | Collected: 23-SEP-11 14:25 By: SWLR | | Received: 24-SEP-11 By: SAP | | | |
| SVE 36 (17.5-20) 092311 EB | | | | | | |
| MC3922-5 | SW846 8015 | 04-OCT-11 16:44 | WS | | | V8015GRO |
| MC3922-5 | SW846-8015 | 05-OCT-11 01:57 | KD | 28-SEP-11 | FC | B8015DROORO |
| MC3922-5 | SW846 8260B | 07-OCT-11 18:20 | JP | | | V8260SL |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3922

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3922-6 Collected: 23-SEP-11 16:00 By: SWLR Received: 24-SEP-11 By: SAP<br>TRIP BLANK 092311 TB | | | | | | |
| MC3922-6 | SW846 8260B | 07-OCT-11 17:51 | JP | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/24/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3922-1.1 | Walk In Ref #9 | Bijan Firowznin | 09/28/11 15:28 | Retrieve from Storage |
| MC3922-1.1 | Bijan Firowznin | Walk In Ref #9 | 09/28/11 16:49 | Return to Storage |
| MC3922-1.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3922-1.3 | VOC Ref #10 | Gary Krasinski | 09/29/11 12:54 | Retrieve from Storage |
| MC3922-1.3 | Gary Krasinski | VOC Ref #10 | 10/03/11 09:52 | Return to Storage |
| MC3922-1.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3922-2.1 | Walk In Ref #9 | Bijan Firowznin | 09/28/11 15:28 | Retrieve from Storage |
| MC3922-2.1 | Bijan Firowznin | Walk In Ref #9 | 09/28/11 16:49 | Return to Storage |
| MC3922-2.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3922-2.3 | VOC Ref #10 | Gary Krasinski | 09/29/11 12:54 | Retrieve from Storage |
| MC3922-2.3 | Gary Krasinski | VOC Ref #10 | 10/03/11 09:52 | Return to Storage |
| MC3922-2.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3922-3.1 | Walk In Ref #9 | Bijan Firowznin | 09/28/11 15:28 | Retrieve from Storage |
| MC3922-3.1 | Bijan Firowznin | Walk In Ref #9 | 09/28/11 16:49 | Return to Storage |
| MC3922-3.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3922-3.3 | VOC Ref #10 | Gary Krasinski | 09/29/11 12:54 | Retrieve from Storage |
| MC3922-3.3 | Gary Krasinski | VOC Ref #10 | 10/03/11 09:52 | Return to Storage |
| MC3922-3.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3922-4.1 | Walk In Ref #9 | Bijan Firowznin | 09/28/11 15:28 | Retrieve from Storage |
| MC3922-4.1 | Bijan Firowznin | Walk In Ref #9 | 09/28/11 16:49 | Return to Storage |
| MC3922-4.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3922-4.3 | VOC Ref #10 | Gary Krasinski | 10/04/11 14:08 | Retrieve from Storage |
| MC3922-4.3 | Gary Krasinski | VOC Ref #10 | 10/05/11 10:35 | Return to Storage |
| MC3922-4.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3922-4.4 | VOC Ref #10 | Gary Krasinski | 09/29/11 12:54 | Retrieve from Storage |
| MC3922-4.4 | Gary Krasinski | VOC Ref #10 | 10/03/11 09:52 | Return to Storage |
| MC3922-4.4 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3922-4.5 | VOC Ref #10 | Amy Min Yang | 10/06/11 13:03 | Retrieve from Storage |
| MC3922-4.5 | Amy Min Yang | GCMSP | 10/06/11 13:03 | Load on Instrument |
| MC3922-4.5 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC3922-4.5 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC3922-4.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3922-4.6 | VOC Ref #10 | Amy Min Yang | 10/06/11 11:00 | Retrieve from Storage |
| MC3922-4.6 | Amy Min Yang | GCMSP | 10/06/11 11:00 | Load on Instrument |

# Accutest Internal Chain of Custody



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/24/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3922-4.6 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC3922-4.6 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC3922-4.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3922-5.1 | Walk In Ref #22 | Michael Rolo | 09/28/11 15:46 | Retrieve from Storage |
| MC3922-5.1 | Michael Rolo | | 09/29/11 01:05 | Depleted |
| MC3922-5.3 | VOC Ref #1 | William Shao | 10/04/11 10:44 | Retrieve from Storage |
| MC3922-5.3 | William Shao | GCBH | 10/04/11 10:44 | Load on Instrument |
| MC3922-5.3 | GCBH | William Shao | 10/04/11 10:44 | Unload from Instrument |
| MC3922-5.3 | William Shao | VOC Ref #1 | 10/04/11 10:44 | Return to Storage |
| MC3922-5.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3922-5.6 | VOC Ref #1 | Emily Kozlowski | 10/07/11 13:11 | Retrieve from Storage |
| MC3922-5.6 | Emily Kozlowski | GCMSM | 10/07/11 13:11 | Load on Instrument |
| MC3922-5.6 | GCMSM | Dana Tyron | 10/08/11 11:16 | Unload from Instrument |
| MC3922-5.6 | Dana Tyron | VOC Ref #1 | 10/08/11 11:17 | Return to Storage |
| MC3922-5.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3922-6.1 | VOC Ref #1 | Emily Kozlowski | 10/07/11 13:11 | Retrieve from Storage |
| MC3922-6.1 | Emily Kozlowski | GCMSM | 10/07/11 13:11 | Load on Instrument |
| MC3922-6.1 | GCMSM | Dana Tyron | 10/08/11 11:16 | Unload from Instrument |
| MC3922-6.1 | Dana Tyron | VOC Ref #1 | 10/08/11 11:17 | Return to Storage |
| MC3922-6.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |

New England ACCUTEST LABORATORIES



## GC/MS Volatiles

# QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1842-MB | K55127.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-1, MC3922-2, MC3922-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 58 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 850 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 250 | 100 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 6.3 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 9.5 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 52 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 10 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 24 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 34 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 59 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 63 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 8.3 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 33 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 48 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 11 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 4.7 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 13 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 250 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 7.4 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 11 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 7.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 56 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 250 | 250 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 33 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 100 | 9.6 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 7.5 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 7.2 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 7.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 17 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 7.6 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 7.3 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 16 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 13 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 11 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 58 | ug/kg | |

# Method Blank Summary

Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1842-MB | K55127.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-1, MC3922-2, MC3922-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 9.2 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 9.6 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 50 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 34 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 160 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 6.5 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 250 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 52 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 7.9 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.1 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 31 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 42 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 15 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 18 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 250 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 8.1 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 25 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 8.8 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 8.4 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 9.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 55 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 250 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 9.2 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 13 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 9.8 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 46 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 10 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 7.9 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 9.1 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 59 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 32 | ug/kg | |
| | m,p-Xylene | ND | 100 | 13 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 9.2 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 6.3 | ug/kg | |

# Method Blank Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1842-MB | K55127.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-1, MC3922-2, MC3922-3

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 104% | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 109% | 70-130% |

# Method Blank Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-MB | P55474.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary

Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-MB | P55474.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-MB | P55474.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-4

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 83% | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 111% | 70-130% |

# Method Blank Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1417-MB | M43820.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-5, MC3922-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |

# Method Blank Summary

Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1417-MB | M43820.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-5, MC3922-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (M1BK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

# Method Blank Summary

Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1417-MB | M43820.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-5, MC3922-6

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 86% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 91% | 70-130% |

# Blank Spike Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1842-BS | K55124.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-1, MC3922-2, MC3922-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 2610 | 104 | 70-130 |
| 107-02-8 | Acrolein | 12500 | 10500 | 84 | 70-130 |
| 107-13-1 | Acrylonitrile | 2500 | 2680 | 107 | 70-130 |
| 71-43-2 | Benzene | 2500 | 2750 | 110 | 70-130 |
| 108-86-1 | Bromobenzene | 2500 | 2980 | 119 | 70-130 |
| 74-97-5 | Bromochloromethane | 2500 | 2810 | 112 | 70-130 |
| 75-27-4 | Bromodichloromethane | 2500 | 2950 | 118 | 70-130 |
| 75-25-2 | Bromoform | 2500 | 3190 | 128 | 70-130 |
| 74-83-9 | Bromomethane | 2500 | 2140 | 86 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 2850 | 114 | 70-130 |
| 104-51-8 | n-Butylbenzene | 2500 | 3040 | 122 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 2500 | 3020 | 121 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2930 | 117 | 70-130 |
| 75-15-0 | Carbon disulfide | 2500 | 2370 | 95 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2890 | 116 | 70-130 |
| 108-90-7 | Chlorobenzene | 2500 | 3080 | 123 | 70-130 |
| 75-00-3 | Chloroethane | 2500 | 2350 | 94 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 1990 | 80 | 10-160 |
| 67-66-3 | Chloroform | 2500 | 2840 | 114 | 70-130 |
| 74-87-3 | Chloromethane | 2500 | 1810 | 72 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2880 | 115 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2960 | 118 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 2500 | 2700 | 108 | 70-130 |
| 124-48-1 | Dibromochloromethane | 2500 | 3240 | 130 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 2500 | 3100 | 124 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 3030 | 121 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 3030 | 121 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 3000 | 120 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 2030 | 81 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2740 | 110 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2780 | 111 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2670 | 107 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2710 | 108 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2700 | 108 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2830 | 113 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2940 | 118 | 70-130 |

# Blank Spike Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1842-BS | K55124.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-1, MC3922-2, MC3922-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 2500 | 3190 | 128 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2890 | 116 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 3000 | 120 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 3200 | 128 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 12500 | 14100 | 113 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2970 | 119 | 76-141 |
| 100-41-4 | Ethylbenzene | 2500 | 3100 | 124 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2940 | 118 | 70-130 |
| 591-78-6 | 2-Hexanone | 2500 | 3140 | 126 | 70-130 |
| 98-82-8 | Isopropylbenzene | 2500 | 3440 | 138* a | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 3050 | 122 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2640 | 106 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 2890 | 116 | 70-130 |
| 74-95-3 | Methylene bromide | 2500 | 2900 | 116 | 70-130 |
| 75-09-2 | Methylene chloride | 2500 | 2740 | 110 | 70-130 |
| 91-20-3 | Naphthalene | 2500 | 2830 | 113 | 70-130 |
| 103-65-1 | n-Propylbenzene | 2500 | 3000 | 120 | 70-130 |
| 100-42-5 | Styrene | 2500 | 3180 | 127 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 3130 | 125 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2980 | 119 | 70-130 |
| 127-18-4 | Tetrachloroethene | 2500 | 3170 | 127 | 70-130 |
| 108-88-3 | Toluene | 2500 | 2910 | 116 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 2800 | 112 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2950 | 118 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2860 | 114 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2990 | 120 | 70-130 |
| 79-01-6 | Trichloroethene | 2500 | 2900 | 116 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2510 | 100 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2940 | 118 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2930 | 117 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2900 | 116 | 70-130 |
| 108-05-4 | Vinyl Acetate | 2500 | 2050 | 82 | 70-130 |
| 75-01-4 | Vinyl chloride | 2500 | 1500 | 60* a | 70-130 |
| | m,p-Xylene | 5000 | 6200 | 124 | 70-130 |
| 95-47-6 | o-Xylene | 2500 | 3080 | 123 | 70-130 |
| 1330-20-7 | Xylene (total) | 7500 | 9270 | 124 | 70-130 |

# Blank Spike Summary

Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1842-BS | K55124.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-1, MC3922-2, MC3922-3

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 113% | 70-130% |
| 2037-26-5 | Toluene-D8 | 119% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 115% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.

# Blank Spike Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-BS | P55472.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 66.4 | 133* a | 70-130 |
| 107-02-8 | Acrolein | 250 | 710 | 284* b | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 53.1 | 106 | 70-130 |
| 71-43-2 | Benzene | 50 | 58.1 | 116 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 56.5 | 113 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 53.3 | 107 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 51.4 | 103 | 70-130 |
| 75-25-2 | Bromoform | 50 | 48.5 | 97 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 54.4 | 109 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 62.8 | 126 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 54.3 | 109 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 60.6 | 121 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 59.2 | 118 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 58.6 | 117 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 52.1 | 104 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 55.5 | 111 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 52.9 | 106 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 53.2 | 106 | 10-160 |
| 67-66-3 | Chloroform | 50 | 55.9 | 112 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 54.8 | 110 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 55.6 | 111 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 59.8 | 120 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 51.0 | 102 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 52.2 | 104 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 51.7 | 103 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 55.5 | 111 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 59.8 | 120 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 60.1 | 120 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 60.8 | 122 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 57.8 | 116 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 63.3 | 127 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 57.3 | 115 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 56.1 | 112 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 57.4 | 115 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 56.1 | 112 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 56.6 | 113 | 70-130 |

# Blank Spike Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-BS | P55472.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-4

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 48.9 | 98 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 58.5 | 117 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 50.9 | 102 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 53.1 | 106 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 230 | 92 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 47.5 | 95 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 56.7 | 113 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 53.4 | 107 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 58.8 | 118 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 63.1 | 126 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 59.8 | 120 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 49.3 | 99 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 52.7 | 105 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 51.8 | 104 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 54.2 | 108 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 51.2 | 102 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 60.6 | 121 | 70-130 |
| 100-42-5 | Styrene | 50 | 56.8 | 114 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 52.7 | 105 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 55.3 | 111 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 59.3 | 119 | 70-130 |
| 108-88-3 | Toluene | 50 | 57.4 | 115 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 47.3 | 95 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 47.5 | 95 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 52.8 | 106 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 51.3 | 103 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 58.7 | 117 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 55.5 | 111 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 55.3 | 111 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 59.0 | 118 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 57.7 | 115 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 43.8 | 88 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 51.1 | 102 | 70-130 |
| | m,p-Xylene | 100 | 116 | 116 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 57.4 | 115 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 173 | 115 | 70-130 |

# Blank Spike Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-BS | P55472.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-4

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 90% | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1417-BS | M43817.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| MSM1417-BSD | M43818.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-5, MC3922-6

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 68.7 | 137* a | 74.4 | 149* a | 8 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 343 | 137* a | 330 | 132* a | 4 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 184 | 368* b | 180 | 360* b | 2 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 49.8 | 100 | 52.1 | 104 | 5 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 54.6 | 109 | 56.2 | 112 | 3 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 52.8 | 106 | 54.4 | 109 | 3 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 55.1 | 110 | 56.1 | 112 | 2 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 51.0 | 102 | 52.0 | 104 | 2 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 48.0 | 96 | 48.5 | 97 | 1 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 51.7 | 103 | 51.3 | 103 | 1 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 51.2 | 102 | 51.9 | 104 | 1 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 53.8 | 108 | 54.0 | 108 | 0 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 51.7 | 103 | 51.5 | 103 | 0 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 46.3 | 93 | 48.4 | 97 | 4 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 59.4 | 119 | 63.0 | 126 | 6 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 56.0 | 112 | 57.4 | 115 | 2 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 47.5 | 95 | 48.9 | 98 | 3 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 15.8 | 32* a | 17.2 | 34* a | 8 | 70-130/25 |
| 67-66-3 | Chloroform | 50 | 49.4 | 99 | 50.3 | 101 | 2 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 40.2 | 80 | 42.3 | 85 | 5 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 49.1 | 98 | 49.8 | 100 | 1 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 49.5 | 99 | 51.2 | 102 | 3 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 39.6 | 79 | 38.9 | 78 | 2 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 58.4 | 117 | 59.2 | 118 | 1 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 52.2 | 104 | 52.7 | 105 | 1 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 52.8 | 106 | 53.5 | 107 | 1 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 52.1 | 104 | 53.7 | 107 | 3 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 50.1 | 100 | 51.6 | 103 | 3 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 50.5 | 101 | 52.0 | 104 | 3 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 48.9 | 98 | 50.1 | 100 | 2 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 51.1 | 102 | 52.8 | 106 | 3 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 51.4 | 103 | 53.7 | 107 | 4 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 50.8 | 102 | 51.6 | 103 | 2 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 52.0 | 104 | 53.6 | 107 | 3 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 52.2 | 104 | 53.4 | 107 | 2 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 49.4 | 99 | 48.7 | 97 | 1 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1417-BS | M43817.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| MSM1417-BSD | M43818.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-5, MC3922-6

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 40.6 | 81 | 41.4 | 83 | 2 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 54.9 | 110 | 57.7 | 115 | 5 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 48.4 | 97 | 49.6 | 99 | 2 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 50.4 | 101 | 52.3 | 105 | 4 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 135 | 54* a | 165 | 66* a | 20 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 42.4 | 85 | 44.7 | 89 | 5 | 77-137/25 |
| 100-41-4 | Ethylbenzene | 50 | 54.7 | 109 | 55.9 | 112 | 2 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 71.8 | 144* a | 73.3 | 147* a | 2 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 62.1 | 124 | 65.9 | 132* a | 6 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 60.8 | 122 | 60.6 | 121 | 0 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 55.1 | 110 | 55.7 | 111 | 1 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 45.0 | 90 | 46.0 | 92 | 2 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 40.8 | 82 | 42.7 | 85 | 5 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 52.2 | 104 | 52.6 | 105 | 1 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 48.5 | 97 | 49.7 | 99 | 2 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 44.5 | 89 | 44.0 | 88 | 1 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 50.9 | 102 | 51.6 | 103 | 1 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 53.2 | 106 | 55.0 | 110 | 3 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 60.1 | 120 | 59.0 | 118 | 2 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 35.3 | 71 | 33.6 | 67* a | 5 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 63.5 | 127 | 64.8 | 130 | 2 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 56.3 | 113 | 58.5 | 117 | 4 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 54.9 | 110 | 54.2 | 108 | 1 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 59.6 | 119 | 60.0 | 120 | 1 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 54.5 | 109 | 56.0 | 112 | 3 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 51.1 | 102 | 52.8 | 106 | 3 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 61.0 | 122 | 63.8 | 128 | 4 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 50.5 | 101 | 53.2 | 106 | 5 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 38.8 | 78 | 39.0 | 78 | 1 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 50.2 | 100 | 50.9 | 102 | 1 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 50.7 | 101 | 50.6 | 101 | 0 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 10.9 | 22* a | 9.2 | 18* a | 17 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 41.3 | 83 | 42.6 | 85 | 3 | 70-130/25 |
| | m,p-Xylene | 100 | 117 | 117 | 118 | 118 | 1 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 57.8 | 116 | 58.5 | 117 | 1 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 174 | 116 | 177 | 118 | 2 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSM1417-BS | M43817.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| MSM1417-BSD | M43818.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-5, MC3922-6

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 84% | 83% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 93% | 92% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4011-6MS | K55135.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |
| MC4011-6MSD | K55136.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |
| MC4011-6 | K55134.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-1, MC3922-2, MC3922-3

| CAS No. | Compound | MC4011-6 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 4200 | 4050 | 96 | 3860 | 92 | 5 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 21000 | 17600 | 84 | 18100 | 86 | 3 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 4200 | 4110 | 98 | 3990 | 95 | 3 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 4200 | 4210 | 100 | 4050 | 96 | 4 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 4200 | 4520 | 108 | 4470 | 106 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 4200 | 4190 | 100 | 4170 | 99 | 0 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 4200 | 4560 | 109 | 4350 | 104 | 5 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 4200 | 4930 | 117 | 4790 | 114 | 3 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 4200 | 2700 | 64* [a] | 2590 | 62* [a] | 4 | 70-130/30 |
| 78-93-3 | 2-Butanoue (MEK) | ND | | 4200 | 4380 | 104 | 4190 | 100 | 4 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 4200 | 4740 | 113 | 4570 | 109 | 4 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 4200 | 4770 | 114 | 4650 | 111 | 3 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 4200 | 4590 | 109 | 4470 | 106 | 3 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 4200 | 3120 | 74 | 3060 | 73 | 2 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 4200 | 4400 | 105 | 4180 | 100 | 5 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 4200 | 4840 | 115 | 4660 | 111 | 4 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 4200 | 3040 | 72 | 2980 | 71 | 2 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 4200 | 2780 | 66 | 2700 | 64 | 3 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 4200 | 4260 | 101 | 4190 | 100 | 2 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 4200 | 2120 | 51* [a] | 2010 | 48* [a] | 5 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 4200 | 4420 | 105 | 4320 | 103 | 2 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 4200 | 4570 | 109 | 4480 | 107 | 2 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 4200 | 3970 | 95 | 3810 | 91 | 4 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 4200 | 5010 | 119 | 4840 | 115 | 3 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 4200 | 4770 | 114 | 4710 | 112 | 1 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 4200 | 4680 | 111 | 4560 | 109 | 3 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 4200 | 4640 | 111 | 4540 | 108 | 2 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 4200 | 4580 | 109 | 4500 | 107 | 2 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 4200 | 2040 | 49* [a] | 2010 | 48* [a] | 1 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 4200 | 4060 | 97 | 3960 | 94 | 2 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 4200 | 4170 | 99 | 4030 | 96 | 3 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 4200 | 3750 | 89 | 3690 | 88 | 2 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 4200 | 3980 | 95 | 3940 | 94 | 1 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 4200 | 4000 | 95 | 3860 | 92 | 4 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 4200 | 4350 | 104 | 4210 | 100 | 3 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 4200 | 4550 | 108 | 4470 | 106 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4011-6MS | K55135.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |
| MC4011-6MSD | K55136.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |
| MC4011-6 | K55134.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-1, MC3922-2, MC3922-3

| CAS No. | Compound | MC4011-6 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 4200 | 4470 | 106 | 4260 | 101 | 5 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 4200 | 4370 | 104 | 4190 | 100 | 4 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 4200 | 4500 | 107 | 4390 | 105 | 2 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 4200 | 4840 | 115 | 4720 | 112 | 3 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 21000 | 20900 | 100 | 19700 | 94 | 6 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 4200 | 4580 | 109 | 4370 | 104 | 5 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 4200 | 4890 | 117 | 4720 | 112 | 4 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 4200 | 4740 | 113 | 4740 | 113 | 0 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 4200 | 4710 | 112 | 4390 | 105 | 7 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 4200 | 5400 | 129 | 5230 | 125 | 3 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 4200 | 4740 | 113 | 4660 | 111 | 2 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 4200 | 3970 | 95 | 3880 | 92 | 2 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 4200 | 4430 | 106 | 4220 | 101 | 5 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 4200 | 4430 | 106 | 4310 | 103 | 3 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 4200 | 4030 | 96 | 3980 | 95 | 1 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 4200 | 4490 | 107 | 4440 | 106 | 1 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 4200 | 4660 | 111 | 4520 | 108 | 3 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 4200 | 4980 | 119 | 4830 | 115 | 3 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 4200 | 4950 | 118 | 4750 | 113 | 4 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 4200 | 4520 | 108 | 4370 | 104 | 3 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 4200 | 4860 | 116 | 4700 | 112 | 3 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 4200 | 4500 | 107 | 4340 | 103 | 4 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 4200 | 4550 | 108 | 4580 | 109 | 1 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 4200 | 4610 | 110 | 4560 | 109 | 1 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 4200 | 4300 | 102 | 4120 | 98 | 4 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 4200 | 4530 | 108 | 4360 | 104 | 4 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 4200 | 4450 | 106 | 4290 | 102 | 4 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 4200 | 3370 | 80 | 3230 | 77 | 4 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 4200 | 4390 | 105 | 4250 | 101 | 3 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 4200 | 4470 | 106 | 4430 | 106 | 1 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 4200 | 4450 | 106 | 4400 | 105 | 1 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 4200 | 2940 | 70 | 2890 | 69* [a] | 2 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 4200 | 2010 | 48* [a] | 2000 | 48* [a] | 0 | 70-130/30 |
| | m,p-Xylene | ND | | 8390 | 9900 | 118 | 9570 | 114 | 3 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 4200 | 4810 | 115 | 4620 | 110 | 4 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 12600 | 14700 | 117 | 14200 | 113 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4011-6MS | K55135.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |
| MC4011-6MSD | K55136.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |
| MC4011-6 | K55134.D | 1 | 09/30/11 | GK | n/a | n/a | MSK1842 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-1, MC3922-2, MC3922-3

| CAS No. | Surrogate Recoveries | MS | MSD | MC4011-6 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 103% | 101% | 110% | 70-130% |
| 2037-26-5 | Toluene-D8 | 109% | 105% | 107% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 106% | 104% | 111% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3921-2MS | P55477.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2MSD | P55478.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2 | P55476.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-4

| CAS No. | Compound | MC3921-2 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 179 | | 62.6 | 91.8 | -139* [a] | 107 | -116* [a] | 15 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 313 | 1670 | 533* [b] | 1870 | 605* [b] | 11 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 62.6 | 91.5 | 146* [b] | 103 | 167* [b] | 12 | 70-130/30 |
| 71-43-2 | Benzene | 8.4 | | 62.6 | 78.2 | 111 | 79.6 | 115 | 2 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 62.6 | 69.3 | 111 | 72.1 | 117 | 4 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 62.6 | 70.8 | 113 | 71.5 | 116 | 1 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 62.6 | 66.8 | 107 | 68.7 | 111 | 3 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 62.6 | 66.4 | 106 | 70.0 | 113 | 5 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 62.6 | 65.1 | 104 | 66.5 | 108 | 2 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 62.6 | 75.1 | 120 | 90.0 | 146* [c] | 18 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 62.6 | 68.1 | 109 | 75.9 | 123 | 11 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 62.6 | 71.2 | 114 | 76.3 | 123 | 7 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 62.6 | 71.4 | 114 | 75.6 | 122 | 6 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 62.6 | 80.3 | 128 | 81.2 | 131* [c] | 1 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 62.6 | 68.1 | 109 | 69.0 | 112 | 1 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 62.6 | 70.0 | 112 | 71.8 | 116 | 3 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 62.6 | 69.4 | 111 | 70.5 | 114 | 2 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 62.6 | 77.6 | 124 | 81.8 | 132 | 5 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 62.6 | 72.9 | 116 | 74.5 | 120 | 2 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 62.6 | 76.2 | 122 | 76.5 | 124 | 0 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 62.6 | 68.3 | 109 | 70.4 | 114 | 3 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 62.6 | 74.5 | 119 | 76.0 | 123 | 2 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 62.6 | 79.8 | 127 | 93.8 | 152* [c] | 16 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 62.6 | 66.8 | 107 | 69.2 | 112 | 4 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 62.6 | 72.4 | 116 | 76.3 | 123 | 5 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 62.6 | 65.9 | 105 | 70.6 | 114 | 7 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 62.6 | 72.3 | 115 | 74.9 | 121 | 4 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 62.6 | 71.6 | 114 | 76.6 | 124 | 7 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 62.6 | 90.0 | 144* [c] | 88.8 | 144* [c] | 1 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 62.6 | 77.9 | 124 | 78.7 | 127 | 1 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 62.6 | 73.5 | 117 | 77.2 | 125 | 5 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 62.6 | 80.8 | 129 | 83.7 | 135* [c] | 4 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 62.6 | 74.7 | 119 | 75.5 | 122 | 1 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 62.6 | 77.7 | 124 | 77.7 | 126 | 0 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 62.6 | 70.2 | 112 | 72.3 | 117 | 3 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 62.6 | 77.6 | 124 | 80.3 | 130 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3921-2MS | P55477.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2MSD | P55478.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2 | P55476.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-4

| CAS No. | Compound | MC3921-2 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 62.6 | 64.3 | 103 | 66.4 | 107 | 3 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 62.6 | 77.7 | 124 | 78.6 | 127 | 1 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 62.6 | 64.9 | 104 | 67.5 | 109 | 4 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 62.6 | 70.1 | 112 | 72.5 | 117 | 3 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 313 | 411 | 131* c | 543 | 176* c | 28 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 62.6 | 66.6 | 106 | 75.4 | 122 | 12 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 13.4 | | 62.6 | 78.0 | 103 | 80.6 | 109 | 3 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 62.6 | 58.0 | 93 | 66.3 | 107 | 13 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 62.6 | 79.2 | 126 | 84.7 | 137* c | 7 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | 1.7 | J | 62.6 | 80.8 | 126 | 83.8 | 133* c | 4 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 62.6 | 71.6 | 114 | 77.7 | 126 | 8 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 62.6 | 70.4 | 112 | 77.0 | 125 | 9 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 62.6 | 77.3 | 123 | 91.5 | 148* c | 17 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 62.6 | 71.5 | 114 | 74.0 | 120 | 3 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 62.6 | 72.7 | 116 | 73.9 | 120 | 2 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 62.6 | 61.8 | 99 | 66.9 | 108 | 8 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 4.0 | J | 62.6 | 75.7 | 114 | 79.6 | 122 | 5 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 62.6 | 70.9 | 113 | 73.6 | 119 | 4 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 62.6 | 65.5 | 105 | 67.2 | 109 | 3 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 62.6 | 80.8 | 129 | 88.0 | 142* c | 9 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 62.6 | 74.9 | 120 | 75.2 | 122 | 0 | 70-130/30 |
| 108-88-3 | Toluene | 10.0 | | 62.6 | 78.8 | 110 | 80.1 | 113 | 2 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 62.6 | 52.7 | 84 | 60.7 | 98 | 14 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 62.6 | 58.3 | 93 | 64.8 | 105 | 11 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 62.6 | 71.3 | 114 | 69.9 | 113 | 2 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 62.6 | 71.2 | 114 | 71.6 | 116 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 62.6 | 76.3 | 122 | 77.2 | 125 | 1 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 62.6 | 75.6 | 121 | 76.5 | 124 | 1 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 62.6 | 85.1 | 136* c | 95.9 | 155* c | 12 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 3.1 | J | 62.6 | 72.9 | 111 | 75.8 | 118 | 4 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 3.0 | J | 62.6 | 71.5 | 109 | 73.5 | 114 | 3 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 62.6 | 67.2 | 107 | 72.2 | 117 | 7 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 62.6 | 66.3 | 106 | 68.1 | 110 | 3 | 70-130/30 |
| | m,p-Xylene | 8.1 | | 125 | 149 | 112 | 152 | 116 | 2 | 70-130/30 |
| 95-47-6 | o-Xylene | 2.8 | | 62.6 | 74.0 | 114 | 75.5 | 118 | 2 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 10.9 | | 188 | 223 | 113 | 228 | 117 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3921-2MS | P55477.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2MSD | P55478.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2 | P55476.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-4

| CAS No. | Surrogate Recoveries | MS | MSD | MC3921-2 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 93% | 95% | 121% | 70-130% |
| 2037-26-5 | Toluene-D8 | 102% | 110% | 144%* [d] | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 94% | 99% | 150%* [d] | 70-130% |

(a) Outside control limits due to high level in sample relative to spike amount.
(b) Outside control limits. Associated samples are non-detect for this compound.
(c) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(d) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3904-15MS | M43830.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| MC3904-15MSD | M43831.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| MC3904-15 | M43827.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-5, MC3922-6

| CAS No. | Compound | MC3904-15 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 5.0 U | | 50 | 35.2 | 70 | 37.4 | 75 | 6 | 70-130/30 |
| 107-02-8 | Acrolein | 25 U | | 250 | 598 | 239* [a] | 609 | 244* [a] | 2 | 70-130/30 |
| 107-13-1 | Acrylonitrile | 5.0 U | | 50 | 190 | 380* [b] | 196 | 392* [b] | 3 | 70-130/30 |
| 71-43-2 | Benzene | 0.50 U | | 50 | 50.7 | 101 | 52.6 | 105 | 4 | 70-130/30 |
| 108-86-1 | Bromobenzene | 5.0 U | | 50 | 54.9 | 110 | 56.2 | 112 | 2 | 70-130/30 |
| 74-97-5 | Bromochloromethane | 5.0 U | | 50 | 55.4 | 111 | 57.6 | 115 | 4 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | 1.0 U | | 50 | 58.4 | 117 | 59.2 | 118 | 1 | 70-130/30 |
| 75-25-2 | Bromoform | 1.0 U | | 50 | 53.7 | 107 | 55.0 | 110 | 2 | 70-130/30 |
| 74-83-9 | Bromomethane | 2.0 U | | 50 | 50.9 | 102 | 52.2 | 104 | 3 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | 5.0 U | | 50 | 58.2 | 116 | 60.8 | 122 | 4 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | 5.0 U | | 50 | 53.4 | 107 | 55.1 | 110 | 3 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | 5.0 U | | 50 | 53.4 | 107 | 54.8 | 110 | 3 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | 5.0 U | | 50 | 51.2 | 102 | 53.0 | 106 | 3 | 70-130/30 |
| 75-15-0 | Carbon disulfide | 5.0 U | | 50 | 48.9 | 98 | 51.3 | 103 | 5 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | 1.0 U | | 50 | 64.6 | 129 | 65.7 | 131* [a] | 2 | 70-130/30 |
| 108-90-7 | Chlorobenzene | 1.0 U | | 50 | 56.5 | 113 | 57.9 | 116 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | 2.0 U | | 50 | 47.7 | 95 | 50.9 | 102 | 6 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 5.0 U | | 50 | ND | 0* [a] | ND | 0* [a] | nc | 70-130/30 |
| 67-66-3 | Chloroform | 1.0 U | | 50 | 52.0 | 104 | 53.6 | 107 | 3 | 70-130/30 |
| 74-87-3 | Chloromethane | 2.0 U | | 50 | 40.9 | 82 | 42.8 | 86 | 5 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | 5.0 U | | 50 | 49.1 | 98 | 50.0 | 100 | 2 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | 5.0 U | | 50 | 51.2 | 102 | 52.2 | 104 | 2 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 5.0 U | | 50 | 44.9 | 90 | 46.1 | 92 | 3 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | 1.0 U | | 50 | 60.8 | 122 | 61.2 | 122 | 1 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | 2.0 U | | 50 | 54.2 | 108 | 55.4 | 111 | 2 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | 1.0 U | | 50 | 53.3 | 107 | 54.3 | 109 | 2 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | 1.0 U | | 50 | 53.4 | 107 | 54.7 | 109 | 2 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | 1.0 U | | 50 | 52.1 | 104 | 52.8 | 106 | 1 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | 2.0 U | | 50 | 55.8 | 112 | 57.5 | 115 | 3 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | 1.0 U | | 50 | 50.4 | 101 | 52.0 | 104 | 3 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | 1.0 U | | 50 | 57.6 | 115 | 57.4 | 115 | 0 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | 1.0 U | | 50 | 53.6 | 107 | 56.2 | 112 | 5 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | 1.0 U | | 50 | 51.1 | 102 | 53.3 | 107 | 4 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | 1.0 U | | 50 | 53.4 | 107 | 56.3 | 113 | 5 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | 2.0 U | | 50 | 52.6 | 105 | 54.3 | 109 | 3 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | 5.0 U | | 50 | 50.6 | 99 | 51.7 | 101 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3904-15MS | M43830.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| MC3904-15MSD | M43831.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |
| MC3904-15 | M43827.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-5, MC3922-6

| CAS No. | Compound | MC3904-15 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 5.0 U | | 50 | 61.8 | 124 | 62.6 | 125 | 1 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | 5.0 U | | 50 | 57.2 | 114 | 59.5 | 119 | 4 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | 0.50 U | | 50 | 52.6 | 105 | 53.7 | 107 | 2 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | 0.50 U | | 50 | 57.6 | 115 | 57.9 | 116 | 1 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | 25 U | | 250 | 176 | 70 | 195 | 78 | 10 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | 5.0 U | | 50 | 49.4 | 99 | 49.9 | 100 | 1 | 72-139/30 |
| 100-41-4 | Ethylbenzene | 1.0 U | | 50 | 53.9 | 108 | 56.3 | 113 | 4 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | 5.0 U | | 50 | 74.8 | 150* [a] | 76.6 | 153* [a] | 2 | 70-130/30 |
| 591-78-6 | 2-Hexanone | 5.0 U | | 50 | 43.1 | 86 | 44.5 | 89 | 3 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | 5.0 U | | 50 | 58.8 | 118 | 60.5 | 121 | 3 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | 5.0 U | | 50 | 55.6 | 111 | 57.0 | 114 | 2 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | 1.0 U | | 50 | 48.7 | 97 | 50.9 | 102 | 4 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 5.0 U | | 50 | 45.0 | 90 | 45.4 | 91 | 1 | 70-130/30 |
| 74-95-3 | Methylene bromide | 5.0 U | | 50 | 56.6 | 113 | 56.9 | 114 | 1 | 70-130/30 |
| 75-09-2 | Methylene chloride | 2.0 U | | 50 | 50.9 | 102 | 52.8 | 106 | 4 | 70-130/30 |
| 91-20-3 | Naphthalene | 5.0 U | | 50 | 47.6 | 95 | 49.8 | 100 | 5 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 5.0 U | | 50 | 50.7 | 101 | 51.9 | 104 | 2 | 70-130/30 |
| 100-42-5 | Styrene | 5.0 U | | 50 | 53.7 | 107 | 54.6 | 109 | 2 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 5.0 U | | 50 | 58.0 | 116 | 60.3 | 121 | 4 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 1.0 U | | 50 | 42.1 | 84 | 43.1 | 86 | 2 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | 1.0 U | | 50 | 62.3 | 125 | 64.3 | 129 | 3 | 70-130/30 |
| 108-88-3 | Toluene | 1.0 U | | 50 | 57.3 | 115 | 58.7 | 117 | 2 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 5.0 U | | 50 | 57.4 | 115 | 60.5 | 121 | 5 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 5.0 U | | 50 | 61.3 | 123 | 64.2 | 128 | 5 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | 1.0 U | | 50 | 58.2 | 116 | 59.8 | 120 | 3 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | 1.0 U | | 50 | 55.8 | 112 | 56.3 | 113 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | 1.0 U | | 50 | 56.5 | 113 | 57.6 | 115 | 2 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | 1.0 U | | 50 | 55.8 | 112 | 57.6 | 115 | 3 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | 5.0 U | | 50 | 42.8 | 86 | 43.1 | 86 | 1 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 5.0 U | | 50 | 50.2 | 100 | 51.5 | 103 | 3 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 5.0 U | | 50 | 49.8 | 100 | 51.2 | 102 | 3 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | 5.0 U | | 50 | 32.3 | 65* [a] | 34.0 | 68* [a] | 5 | 70-130/30 |
| 75-01-4 | Vinyl chloride | 1.0 U | | 50 | 42.5 | 85 | 43.6 | 87 | 3 | 70-130/30 |
| | m,p-Xylene | 1.0 U | | 100 | 116 | 116 | 119 | 119 | 3 | 70-130/30 |
| 95-47-6 | o-Xylene | 1.0 U | | 50 | 56.0 | 112 | 59.1 | 118 | 5 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 1.0 U | | 150 | 172 | 115 | 178 | 119 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3904-15MS | M43830.D | 1 | 10/07/I1 | JP | n/a | n/a | MSM1417 |
| MC3904-15MSD | M43831.D | 1 | I0/07/11 | JP | n/a | n/a | MSM1417 |
| MC3904-15 | M43827.D | 1 | 10/07/11 | JP | n/a | n/a | MSM1417 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3922-5, MC3922-6

| CAS No. | Surrogate Recoveries | MS | MSD | MC3904-15 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 87% | 89% | 89% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 99% | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 93% | 94% | 92% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Volatile Internal Standard Area Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSK1842-CC1831 | Injection Date: | 09/30/11 |
| Lab File ID: | K55123.D | Injection Time: | 10:07 |
| Instrument ID: | GCMSK | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 299822 | 8.86 | 387445 | 9.71 | 182264 | 12.97 | 219610 | 15.53 | 91135 | 6.48 |
| Upper Limit [a] | 599644 | 9.36 | 774890 | 10.21 | 364528 | 13.47 | 439220 | 16.03 | 182270 | 6.98 |
| Lower Limit [b] | 149911 | 8.36 | 193723 | 9.21 | 91132 | 12.47 | 109805 | 15.03 | 45568 | 5.98 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSK1842-BS | 252693 | 8.86 | 328617 | 9.71 | 160493 | 12.97 | 186648 | 15.53 | 80315 | 6.48 |
| MSK1842-MB | 289254 | 8.87 | 390063 | 9.72 | 179017 | 12.97 | 195362 | 15.53 | 85672 | 6.48 |
| ZZZZZZ | 285980 | 8.86 | 383528 | 9.71 | 171416 | 12.97 | 204430 | 15.53 | 74002 | 6.48 |
| ZZZZZZ | 306639 | 8.86 | 410337 | 9.71 | 183216 | 12.97 | 215810 | 15.53 | 100704 | 6.48 |
| ZZZZZZ | 304932 | 8.86 | 406409 | 9.71 | 184424 | 12.97 | 219155 | 15.53 | 93181 | 6.47 |
| ZZZZZZ | 311139 | 8.86 | 409519 | 9.71 | 187331 | 12.97 | 217338 | 15.53 | 83838 | 6.48 |
| ZZZZZZ | 306588 | 8.86 | 410598 | 9.71 | 188301 | 12.97 | 214011 | 15.53 | 96823 | 6.48 |
| ZZZZZZ | 300000 | 8.86 | 406773 | 9.71 | 184876 | 12.97 | 206460 | 15.53 | 88585 | 6.48 |
| MC4011-6 | 295032 | 8.86 | 401138 | 9.71 | 184714 | 12.97 | 210607 | 15.53 | 84825 | 6.48 |
| MC4011-6MS | 287651 | 8.86 | 372155 | 9.71 | 178523 | 12.97 | 212094 | 15.53 | 86802 | 6.48 |
| MC4011-6MSD | 293485 | 8.86 | 384859 | 9.71 | 184095 | 12.97 | 216454 | 15.53 | 84997 | 6.48 |
| ZZZZZZ | 310640 | 8.86 | 414791 | 9.71 | 189247 | 12.97 | 217559 | 15.53 | 103498 | 6.48 |
| ZZZZZZ | 291544 | 8.87 | 391643 | 9.72 | 177165 | 12.97 | 200310 | 15.53 | 99990 | 6.49 |
| ZZZZZZ | 288124 | 8.86 | 376253 | 9.71 | 171382 | 12.97 | 214956 | 15.53 | 84628 | 6.48 |
| MC3922-1 | 302352 | 8.87 | 399556 | 9.71 | 176057 | 12.97 | 214220 | 15.53 | 91326 | 6.48 |
| MC3922-2 | 297601 | 8.86 | 403794 | 9.71 | 182335 | 12.97 | 210507 | 15.53 | 81126 | 6.48 |
| MC3922-3 | 311015 | 8.86 | 413719 | 9.71 | 189775 | 12.97 | 216240 | 15.53 | 96616 | 6.48 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1416-CC1371 | Injection Date: | 10/06/11 |
| Lab File ID: | M43792.D | Injection Time: | 09:35 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 95265 | 9.19 | 139983 | 10.06 | 72856 | 13.34 | 95354 | 15.90 | 20822 | 6.74 |
| Upper Limit [a] | 190530 | 9.69 | 279966 | 10.56 | 145712 | 13.84 | 190708 | 16.40 | 41644 | 7.24 |
| Lower Limit [b] | 47633 | 8.69 | 69992 | 9.56 | 36428 | 12.84 | 47677 | 15.40 | 10411 | 6.24 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1416-BS | 98211 | 9.19 | 145594 | 10.07 | 75183 | 13.34 | 97218 | 15.90 | 23516 | 6.75 |
| MSM1416-BSD | 100336 | 9.19 | 147143 | 10.07 | 77609 | 13.33 | 99303 | 15.90 | 24059 | 6.74 |
| MSM1416-MB | 89971 | 9.19 | 130976 | 10.07 | 66904 | 13.34 | 88090 | 15.90 | 21938 | 6.74 |
| ZZZZZZ | 86108 | 9.19 | 124344 | 10.06 | 61467 | 13.34 | 81363 | 15.90 | 22653 | 6.74 |
| ZZZZZZ | 87180 | 9.19 | 126031 | 10.07 | 61986 | 13.34 | 81157 | 15.90 | 22644 | 6.74 |
| ZZZZZZ | 82952 | 9.19 | 120841 | 10.07 | 59831 | 13.34 | 78179 | 15.90 | 22290 | 6.74 |
| ZZZZZZ | 82038 | 9.19 | 118483 | 10.07 | 59008 | 13.34 | 76673 | 15.90 | 22598 | 6.73 |
| ZZZZZZ | 83618 | 9.19 | 120868 | 10.07 | 60397 | 13.34 | 77728 | 15.90 | 22878 | 6.74 |
| ZZZZZZ | 82171 | 9.19 | 119654 | 10.07 | 58910 | 13.34 | 75084 | 15.90 | 22656 | 6.74 |
| ZZZZZZ | 76589 | 9.19 | 112810 | 10.07 | 55106 | 13.34 | 71718 | 15.90 | 22042 | 6.74 |
| ZZZZZZ | 77565 | 9.19 | 111765 | 10.07 | 56806 | 13.34 | 72386 | 15.90 | 21552 | 6.74 |
| MC3964-1 | 81293 | 9.19 | 119141 | 10.07 | 59333 | 13.34 | 79524 | 15.90 | 22064 | 6.74 |
| ZZZZZZ | 82505 | 9.19 | 119666 | 10.07 | 58669 | 13.34 | 75989 | 15.90 | 23383 | 6.73 |
| ZZZZZZ | 80753 | 9.19 | 116498 | 10.07 | 56479 | 13.33 | 75264 | 15.90 | 21407 | 6.74 |
| ZZZZZZ | 89292 | 9.19 | 131346 | 10.07 | 66573 | 13.34 | 88380 | 15.90 | 22808 | 6.75 |
| ZZZZZZ | 95255 | 9.19 | 138858 | 10.07 | 69185 | 13.34 | 91674 | 15.90 | 25266 | 6.74 |
| MC3964-1MS | 100075 | 9.19 | 146774 | 10.07 | 75093 | 13.34 | 97376 | 15.90 | 26042 | 6.74 |
| MC3964-1MSD | 103720 | 9.19 | 152316 | 10.07 | 77751 | 13.34 | 98766 | 15.90 | 26113 | 6.74 |
| ZZZZZZ | 105372 | 9.19 | 153909 | 10.07 | 75537 | 13.34 | 99006 | 15.90 | 27138 | 6.73 |
| ZZZZZZ | 100938 | 9.19 | 144618 | 10.07 | 73506 | 13.34 | 96776 | 15.90 | 25581 | 6.74 |
| ZZZZZZ | 106099 | 9.19 | 153970 | 10.07 | 76217 | 13.33 | 99860 | 15.90 | 25531 | 6.74 |
| MSM1417-BS | 104656 | 9.19 | 155330 | 10.07 | 76981 | 13.34 | 98502 | 15.90 | 23761 | 6.74 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSM1417-CC1370 | Injection Date: | 10/07/11 |
| Lab File ID: | M43817.D | Injection Time: | 09:16 |
| Instrument ID: | GCMSM | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 104656 | 9.19 | 155330 | 10.07 | 76981 | 13.34 | 98502 | 15.90 | 23761 | 6.74 |
| Upper Limit [a] | 209312 | 9.69 | 310660 | 10.57 | 153962 | 13.84 | 197004 | 16.40 | 47522 | 7.24 |
| Lower Limit [b] | 52328 | 8.69 | 77665 | 9.57 | 38491 | 12.84 | 49251 | 15.40 | 11881 | 6.24 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSM1417-BSD | 103587 | 9.19 | 149273 | 10.07 | 76965 | 13.34 | 99280 | 15.90 | 24557 | 6.75 |
| MSM1417-MB | 95722 | 9.19 | 141041 | 10.07 | 70917 | 13.34 | 92325 | 15.90 | 24297 | 6.75 |
| ZZZZZZ | 92160 | 9.19 | 136103 | 10.07 | 69708 | 13.34 | 90781 | 15.90 | 24046 | 6.74 |
| ZZZZZZ | 90345 | 9.19 | 130835 | 10.07 | 65771 | 13.34 | 87482 | 15.90 | 23270 | 6.74 |
| ZZZZZZ | 85571 | 9.19 | 124700 | 10.07 | 61399 | 13.33 | 81943 | 15.90 | 23045 | 6.74 |
| ZZZZZZ | 86615 | 9.19 | 126101 | 10.07 | 62828 | 13.34 | 81760 | 15.90 | 22960 | 6.74 |
| ZZZZZZ | 84786 | 9.19 | 123941 | 10.07 | 61004 | 13.34 | 79637 | 15.90 | 23053 | 6.74 |
| ZZZZZZ | 82721 | 9.19 | 120321 | 10.07 | 59288 | 13.33 | 77895 | 15.90 | 21940 | 6.74 |
| MC3904-15 | 82242 | 9.19 | 117560 | 10.07 | 58514 | 13.34 | 75852 | 15.90 | 23312 | 6.74 |
| ZZZZZZ | 81697 | 9.19 | 119483 | 10.07 | 58970 | 13.34 | 77946 | 15.90 | 23233 | 6.74 |
| ZZZZZZ | 81538 | 9.19 | 116647 | 10.07 | 57309 | 13.34 | 75260 | 15.90 | 23102 | 6.74 |
| MC3904-15MS | 85947 | 9.19 | 125926 | 10.07 | 65733 | 13.34 | 84889 | 15.90 | 24408 | 6.75 |
| MC3904-15MSD | 87285 | 9.19 | 128265 | 10.07 | 66648 | 13.34 | 87147 | 15.90 | 25939 | 6.74 |
| ZZZZZZ | 89992 | 9.19 | 131244 | 10.07 | 64639 | 13.34 | 84375 | 15.90 | 26151 | 6.74 |
| ZZZZZZ | 85510 | 9.19 | 122606 | 10.07 | 63049 | 13.34 | 82008 | 15.90 | 24842 | 6.74 |
| MC3922-6 | 82502 | 9.19 | 120238 | 10.07 | 59498 | 13.34 | 79602 | 15.90 | 23397 | 6.74 |
| MC3922-5 | 81582 | 9.19 | 118361 | 10.07 | 57594 | 13.34 | 76032 | 15.90 | 23281 | 6.74 |
| ZZZZZZ | 79806 | 9.19 | 115935 | 10.07 | 56761 | 13.34 | 74626 | 15.90 | 22176 | 6.75 |
| ZZZZZZ | 79521 | 9.19 | 117814 | 10.07 | 58383 | 13.34 | 79513 | 15.90 | 21645 | 6.74 |
| ZZZZZZ | 103810 | 9.19 | 152630 | 10.06 | 76417 | 13.33 | 101988 | 15.90 | 26460 | 6.74 |
| ZZZZZZ | 106193 | 9.19 | 154639 | 10.07 | 75661 | 13.34 | 102862 | 15.90 | 26724 | 6.74 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSP1816-CC1815 | Injection Date: | 10/06/11 |
| Lab File ID: | P55471.D | Injection Time: | 09:58 |
| Instrument ID: | GCMSP | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 83163 | 8.50 | 138001 | 9.35 | 74719 | 12.57 | 54357 | 15.13 | 29790 | 6.26 |
| Upper Limit [a] | 166326 | 9.00 | 276002 | 9.85 | 149438 | 13.07 | 108714 | 15.63 | 59580 | 6.76 |
| Lower Limit [b] | 41582 | 8.00 | 69001 | 8.85 | 37360 | 12.07 | 27179 | 14.63 | 14895 | 5.76 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSP1816-BS | 83854 | 8.50 | 140081 | 9.35 | 75068 | 12.57 | 54140 | 15.13 | 30900 | 6.26 |
| MSP1816-MB | 69783 | 8.51 | 114190 | 9.36 | 57324 | 12.58 | 34582 | 15.14 | 24102 | 6.31 |
| MC3921-2 | 53944 | 8.51 | 90066 | 9.36 | 45294 | 12.58 | 28489 | 15.14 | 27620 | 6.39 |
| MC3921-2MS | 78832 | 8.50 | 133947 | 9.35 | 72083 | 12.57 | 52976 | 15.13 | 43232 | 6.28 |
| MC3921-2MSD | 74780 | 8.50 | 126335 | 9.35 | 67726 | 12.57 | 49416 | 15.13 | 49242 | 6.26 |
| MC3922-4 | 62020 | 8.51 | 104610 | 9.36 | 52375 | 12.58 | 33622 | 15.13 | 40087 | 6.32 |
| ZZZZZZ | 54959 | 8.50 | 91183 | 9.36 | 47937 | 12.58 | 32837 | 15.13 | 31178 | 6.31 |
| ZZZZZZ | 65980 | 8.51 | 111733 | 9.36 | 57230 | 12.58 | 37080 | 15.14 | 43647 | 6.34 |
| ZZZZZZ | 55569 | 8.50 | 93030 | 9.36 | 47654 | 12.58 | 32267 | 15.13 | 32324 | 6.29 |
| ZZZZZZ | 77439 | 8.50 | 125935 | 9.36 | 65483 | 12.57 | 49375 | 15.13 | 45444 | 6.29 |
| ZZZZZZ | 72789 | 8.50 | 118453 | 9.36 | 58471 | 12.58 | 43146 | 15.13 | 43509 | 6.29 |
| ZZZZZZ | 67303 | 8.49 | 110264 | 9.35 | 56007 | 12.57 | 40037 | 15.13 | 42083 | 6.18 |
| ZZZZZZ | 88575 | 8.50 | 143581 | 9.35 | 75004 | 12.57 | 53494 | 15.13 | 42716 | 6.31 |
| ZZZZZZ | 80501 | 8.50 | 131067 | 9.36 | 65595 | 12.58 | 49175 | 15.13 | 44781 | 6.30 |
| ZZZZZZ | 74489 | 8.50 | 121457 | 9.36 | 61511 | 12.58 | 41041 | 15.13 | 41168 | 6.28 |
| ZZZZZZ | 69984 | 8.50 | 115826 | 9.36 | 59202 | 12.58 | 40969 | 15.13 | 41101 | 6.29 |
| ZZZZZZ | 68754 | 8.50 | 113794 | 9.36 | 57474 | 12.58 | 37448 | 15.13 | 36550 | 6.31 |
| ZZZZZZ | 67922 | 8.50 | 113247 | 9.36 | 58349 | 12.58 | 38037 | 15.13 | 40061 | 6.31 |
| ZZZZZZ | 65660 | 8.50 | 108890 | 9.36 | 56199 | 12.58 | 35844 | 15.13 | 35906 | 6.29 |
| ZZZZZZ | 66387 | 8.50 | 109965 | 9.36 | 56738 | 12.58 | 35724 | 15.14 | 36470 | 6.32 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Surrogate Recovery Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3922-5 | M43835.D | 92.0 | 98.0 | 91.0 |
| MC3922-6 | M43834.D | 91.0 | 98.0 | 90.0 |
| MC3904-15MS | M43830.D | 87.0 | 98.0 | 93.0 |
| MC3904-15MSD | M43831.D | 89.0 | 99.0 | 94.0 |
| MSM1417-BS | M43817.D | 84.0 | 98.0 | 93.0 |
| MSM1417-BSD | M43818.D | 83.0 | 98.0 | 92.0 |
| MSM1417-MB | M43820.D | 86.0 | 98.0 | 91.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

5.6.1

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# Volatile Surrogate Recovery Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3922-1 | K55141.D | 107.0 | 102.0 | 108.0 |
| MC3922-2 | K55142.D | 106.0 | 103.0 | 109.0 |
| MC3922-3 | K55143.D | 105.0 | 104.0 | 110.0 |
| MC3922-4 | P55480.D | 98.0 | 118.0 | 118.0 |
| MC3921-2MS | P55477.D | 93.0 | 102.0 | 94.0 |
| MC3921-2MSD | P55478.D | 95.0 | 110.0 | 99.0 |
| MC4011-6MS | K55135.D | 103.0 | 109.0 | 106.0 |
| MC4011-6MSD | K55136.D | 101.0 | 105.0 | 104.0 |
| MSK1842-BS | K55124.D | 113.0 | 119.0 | 115.0 |
| MSK1842-MB | K55127.D | 104.0 | 101.0 | 109.0 |
| MSP1816-BS | P55472.D | 90.0 | 104.0 | 95.0 |
| MSP1816-MB | P55474.D | 83.0 | 104.0 | 111.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

5.6.2

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New England ACCUTEST LABORATORIES

# GC Volatiles



## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1337-MB | BH24330.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1337 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3922-1, MC3922-2, MC3922-3, MC3922-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 0.95 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 88% | 36-148% |

# Method Blank Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1336-MB | BH24330A.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1336 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3922-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 0.10 | 0.070 | mg/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 88% | 60-126% |

# Blank Spike Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1337-BSP | BH24331.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1337 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3922-1, MC3922-2, MC3922-3, MC3922-4

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 20.1 | 101 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 87% | 36-148% |

# Blank Spike Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1336-BSP | BH24331A.D1 | | 10/04/11 | WS | n/a | n/a | GBH1336 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3922-5

| CAS No. | Compound | Spike mg/l | BSP mg/l | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 0.4 | 0.402 | 101 | 68-134 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 87% | 60-126% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3835-5MS | BH24333.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1336 |
| MC3835-5MSD | BH24334.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1336 |
| MC3835-5 | BH24332.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1336 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3922-5

| CAS No. | Compound | MC3835-5 mg/l | Q | Spike mg/l | MS mg/l | MS % | MSD mg/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 0.4 | 0.434 | 109 | 0.417 | 104 | 4 | 72-131/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3835-5 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 91% | 87% | 89% | 60-126% |

6.3.1

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# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4079-11MS | BH24338.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1337 |
| MC4079-11MSD | BH24339.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1337 |
| MC4079-11 | BH24337.D | 1 | 10/04/11 | WS | n/a | n/a | GBH1337 |



The QC reported here applies to the following samples: Method: SW846 8015

MC3922-1, MC3922-2, MC3922-3, MC3922-4

| CAS No. | Compound | MC4079-11 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 51.1 | 66.7 | 131 | 73.9 | 145 | 10 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4079-11 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 88% | 85% | 86% | 36-148% |

# Volatile Surrogate Recovery Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8015 Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3922-5 | BH24335.D | 84.0 |
| GBH1336-BSP | BH24331A.D | 87.0 |
| GBH1336-MB | BH24330A.D | 88.0 |
| MC3835-5MS | BH24333.D | 91.0 |
| MC3835-5MSD | BH24334.D | 87.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 60-126% |

(a) Recovery from GC signal #1

# Volatile Surrogate Recovery Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Method: SW846 8015 | Matrix: SO |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3922-1 | BH24354.D | 94.0 |
| MC3922-2 | BH24355.D | 92.0 |
| MC3922-3 | BH24356.D | 89.0 |
| MC3922-4 | BH24357.D | 90.0 |
| GBH1337-BSP | BH24331.D | 87.0 |
| GBH1337-MB | BH24330.D | 88.0 |
| MC4079-11MS | BH24338.D | 88.0 |
| MC4079-11MSD | BH24339.D | 85.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1336-CC1043 | Injection Date: | 10/04/11 |
| Lab File ID: | BH24329A.D | Injection Time: | 12:45 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1337-MB | BH24330.D | 10/04/11 | 13:25 | 32.40 |
| GBH1336-MB | BH24330A.D | 10/04/11 | 13:25 | 32.40 |
| GBH1337-BSP | BH24331.D | 10/04/11 | 14:05 | 32.40 |
| GBH1336-BSP | BH24331A.D | 10/04/11 | 14:05 | 32.40 |
| MC3835-5 | BH24332.D | 10/04/11 | 14:45 | 32.40 |
| MC3835-5MS | BH24333.D | 10/04/11 | 15:24 | 32.40 |
| MC3835-5MSD | BH24334.D | 10/04/11 | 16:04 | 32.40 |
| MC3922-5 | BH24335.D | 10/04/11 | 16:44 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1337-CC1043 | Injection Date: | 10/04/11 |
| Lab File ID: | BH24329.D | Injection Time: | 12:45 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1337-MB | BH24330.D | 10/04/11 | 13:25 | 32.40 |
| GBH1336-MB | BH24330A.D | 10/04/11 | 13:25 | 32.40 |
| GBH1337-BSP | BH24331.D | 10/04/11 | 14:05 | 32.40 |
| GBH1336-BSP | BH24331A.D | 10/04/11 | 14:05 | 32.40 |
| MC3835-5 | BH24332.D | 10/04/11 | 14:45 | 32.40 |
| MC3835-5MS | BH24333.D | 10/04/11 | 15:24 | 32.40 |
| MC3835-5MSD | BH24334.D | 10/04/11 | 16:04 | 32.40 |
| MC3922-5 | BH24335.D | 10/04/11 | 16:44 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1337-CC1043 | Injection Date: | 10/04/11 |
| Lab File ID: | BH24336.D | Injection Time: | 17:24 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC4079-11 | BH24337.D | 10/04/11 | 18:04 | 32.40 |
| MC4079-11MS | BH24338.D | 10/04/11 | 18:43 | 32.40 |
| MC4079-11MSD | BH24339.D | 10/04/11 | 19:23 | 32.40 |
| ZZZZZZ | BH24340.D | 10/04/11 | 20:03 | 32.39 |
| ZZZZZZ | BH24341.D | 10/04/11 | 20:43 | 32.40 |
| ZZZZZZ | BH24342.D | 10/04/11 | 21:22 | 32.40 |
| ZZZZZZ | BH24343.D | 10/04/11 | 22:02 | 32.40 |
| ZZZZZZ | BH24344.D | 10/04/11 | 22:42 | 32.40 |
| ZZZZZZ | BH24345.D | 10/04/11 | 23:21 | 32.40 |
| ZZZZZZ | BH24346.D | 10/05/11 | 00:01 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1336-CC1043 | Injection Date: | 10/04/11 |
| Lab File ID: | BH24336A.D | Injection Time: | 17:24 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC4079-11 | BH24337.D | 10/04/11 | 18:04 | 32.40 |
| MC4079-11MS | BH24338.D | 10/04/11 | 18:43 | 32.40 |
| MC4079-11MSD | BH24339.D | 10/04/11 | 19:23 | 32.40 |
| ZZZZZZ | BH24340.D | 10/04/11 | 20:03 | 32.39 |
| ZZZZZZ | BH24341.D | 10/04/11 | 20:43 | 32.40 |
| ZZZZZZ | BH24342.D | 10/04/11 | 21:22 | 32.40 |
| ZZZZZZ | BH24343.D | 10/04/11 | 22:02 | 32.40 |
| ZZZZZZ | BH24344.D | 10/04/11 | 22:42 | 32.40 |
| ZZZZZZ | BH24345.D | 10/04/11 | 23:21 | 32.40 |
| ZZZZZZ | BH24346.D | 10/05/11 | 00:01 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1337-CC1043 | Injection Date: | 10/05/11 |
| Lab File ID: | BH24347.D | Injection Time: | 00:41 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BH24348.D | 10/05/11 | 01:20 | 32.39 |
| ZZZZZZ | BH24349.D | 10/05/11 | 02:00 | 32.40 |
| ZZZZZZ | BH24350.D | 10/05/11 | 02:39 | 32.40 |
| ZZZZZZ | BH24351.D | 10/05/11 | 03:19 | 32.40 |
| ZZZZZZ | BH24352.D | 10/05/11 | 03:59 | 32.40 |
| ZZZZZZ | BH24353.D | 10/05/11 | 04:38 | 32.40 |
| MC3922-1 | BH24354.D | 10/05/11 | 05:18 | 32.40 |
| MC3922-2 | BH24355.D | 10/05/11 | 05:57 | 32.40 |
| MC3922-3 | BH24356.D | 10/05/11 | 06:37 | 32.40 |
| MC3922-4 | BH24357.D | 10/05/11 | 07:16 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

6.5.5

New England ACCUTEST LABORATORIES

## GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26402-MB | BG31482.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1128 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3922-1, MC3922-2, MC3922-3, MC3922-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 16 | 12 | mg/kg | |
| | TPH (> C28-C40) | ND | 16 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 93% | 24-147% |

# Method Blank Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26420-MB | BG31379.D | 1 | 10/04/11 | KD | 09/28/11 | OP26420 | GBG1122 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3922-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 0.20 | 0.14 | mg/l | |
| | TPH (> C28-C40) | ND | 0.20 | 0.14 | mg/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 72% | 33-150% |

# Blank Spike Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26402-BS | BG31484.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1128 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3922-1, MC3922-2, MC3922-3, MC3922-4

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 164 | 157 | 96 | 63-139 |
| | TPH (>C28-C40) | 164 | 120 | 73 | 46-103 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 94% | 24-147% |

# Blank Spike Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26420-BS | BG3I381.D | 1 | 10/04/11 | KD | 09/28/11 | OP26420 | GBG1122 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3922-5

| CAS No. | Compound | Spike mg/l | BSP mg/l | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 2.5 | 2.51 | 100 | 46-120 |
| | TPH (>C28-C40) | 2.5 | 2.00 | 80 | 46-120 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 82% | 33-150% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26402-MS | BG31495.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1129 |
| OP26402-MSD | BG31497.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1129 |
| MC3921-2 | BG31499.D | 1 | 10/06/11 | KD | 09/27/11 | OP26402 | GBG1129 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3922-1, MC3922-2, MC3922-3, MC3922-4



| CAS No. | Compound | MC3921-2 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 185 | 133 | 72 | 207 | 109 | 44 | 8-154/127 |
| | TPH (> C28-C40) | ND | | 185 | 97.3 | 53 | 153 | 80 | 45* [a] | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC3921-2 | Limits |
|---|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 75% | 0%* [b] | 110% | 24-147% |

(a) Outside control limits due to possible matrix interference.
(b) Surrogate standard not added.Range recovery satisfactory.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26420-MS | BG31383.D | 1 | 10/04/11 | KD | 09/28/11 | OP26420 | GBG1122 |
| OP26420-MSD | BG31385.D | 1 | 10/04/11 | KD | 09/28/11 | OP26420 | GBG1122 |
| MC4057-2 | BG31387.D | 1 | 10/04/11 | KD | 09/28/11 | OP26420 | GBG1122 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3922-5



| CAS No. | Compound | MC4057-2 mg/l | Q | Spike mg/l | MS mg/l | MS % | MSD mg/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 2.5 | 2.67 | 107 | 2.19 | 88 | 20 | 45-120/25 |
| | TPH (> C28-C40) | ND | | 2.5 | 2.12 | 85 | 1.72 | 69 | 21 | 45-120/25 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4057-2 | Limits |
|---|---|---|---|---|---|
| 3386-33-2 | 1-Chlorooctadecane | 86% | 74% | 86% | 33-150% |

# Semivolatile Surrogate Recovery Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3922-5 | BG31419.D | 66.0 |
| OP26420-BS | BG31381.D | 82.0 |
| OP26420-MB | BG31379.D | 72.0 |
| OP26420-MS | BG31383.D | 86.0 |
| OP26420-MSD | BG31385.D | 74.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 1-Chlorooctadecane | 33-150% |

(a) Recovery from GC signal #1

# Semivolatile Surrogate Recovery Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3922-1 | BG31507.D | 100.0 |
| MC3922-2 | BG31500.D | 85.0 |
| MC3922-3 | BG31486.D | 88.0 |
| MC3922-4 | BG31496.D | 92.0 |
| OP26402-BS | BG31484.D | 94.0 |
| OP26402-MB | BG31482.D | 93.0 |
| OP26402-MS | BG31495.D | 75.0 |
| OP26402-MSD | BG31497.D | 0.0* [b] |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 1-Chlorooctadecane | 24-147% |

(a) Recovery from GC signal #1
(b) Surrogate standard not added.Range recovery satisfactory.

# GC Surrogate Retention Time Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1122-ICC1122 | Injection Date: | 10/03/11 |
| Lab File ID: | BG31373.D | Injection Time: | 21:42 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 17.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26420-MB | BG31379.D | 10/04/11 | 00:20 | 17.39 |
| OP26420-BS | BG31381.D | 10/04/11 | 01:17 | 17.39 |
| OP26420-MS | BG31383.D | 10/04/11 | 02:13 | 17.39 |
| OP26420-MSD | BG31385.D | 10/04/11 | 03:09 | 17.39 |
| MC4057-2 | BG31387.D | 10/04/11 | 04:13 | 17.39 |
| GBG1122-ECC112 | BG31393.D | 10/04/11 | 08:35 | 17.39 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1125-ICC1125 | Injection Date: | 10/04/11 |
| Lab File ID: | BG31414.D | Injection Time: | 22:06 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 16.31 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31417.D | 10/05/11 | 00:24 | 16.31 |
| ZZZZZZ | BG31418.D | 10/05/11 | 01:11 | 16.30 |
| MC3922-5 | BG31419.D | 10/05/11 | 01:57 | 16.30 |
| OP26384-MB | BG31420.D | 10/05/11 | 02:43 | 16.31 |
| OP26384-BS | BG31421.D | 10/05/11 | 03:30 | 16.31 |
| OP26384-MS | BG31422.D | 10/05/11 | 04:16 | 16.31 |
| OP26384-MSD | BG31423.D | 10/05/11 | 05:02 | 16.31 |
| MC3836-3 | BG31424.D | 10/05/11 | 05:49 | 16.31 |
| ZZZZZZ | BG31425.D | 10/05/11 | 06:35 | 16.31 |
| ZZZZZZ | BG31426.D | 10/05/11 | 07:22 | 16.31 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.2

7

# GC Surrogate Retention Time Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1128-CC1125 | Injection Date: | 10/06/11 |
| Lab File ID: | BG31480.D | Injection Time: | 13:43 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 16.31 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26402-MB | BG31482.D | 10/06/11 | 15:03 | 16.32 |
| OP26402-BS | BG31484.D | 10/06/11 | 15:49 | 16.33 |
| MC3922-3 | BG31486.D | 10/06/11 | 16:35 | 16.32 |
| ZZZZZZ | BG31488.D | 10/06/11 | 17:22 | 16.32 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1129-ICC1129 | Injection Date: | 10/06/11 |
| Lab File ID: | BG31489.D | Injection Time: | 17:22 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 15.61 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31490.D | 10/06/11 | 18:09 | 16.32 |
| ZZZZZZ | BG31492.D | 10/06/11 | 18:56 | 16.32 |
| ZZZZZZ | BG31494.D | 10/06/11 | 19:43 | 16.32 |
| OP26402-MS | BG31495.D | 10/06/11 | 19:43 | 15.61 |
| MC3922-4 | BG31496.D | 10/06/11 | 20:30 | 16.32 |
| OP26402-MSD | BG31497.D | 10/06/11 | 20:30 | 15.67 |
| ZZZZZZ | BG31498.D | 10/06/11 | 21:17 | 16.35 |
| MC3921-2 | BG31499.D | 10/06/11 | 21:17 | 15.62 |
| MC3922-2 | BG31500.D | 10/06/11 | 22:03 | 16.32 |
| ZZZZZZ | BG31501.D | 10/06/11 | 22:03 | 15.62 |
| GBG1128-ECC112 | BG31502.D | 10/06/11 | 22:50 | 16.31 |
| GBG1129-ECC112 | BG31513.D | 10/07/11 | 02:43 | 15.61 |

Surrogate Compounds

S1 = 1-Chlorooctadecane

(a) Retention time from GC signal #1

7.5.4

7

New England ACCUTEST LABORATORIES

## General Chemistry

# QC Data Summaries

8

Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC3922
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC3922-1 Analyzed: 28-SEP-11 by BF Method: SM21 2540 B MOD.
ClientID: SVE-35 (16-18) 092311

| | | |
|---|---|---|
| Wet Weight (Total) | 29.796 | g |
| Tare Weight | 18.827 | g |
| Dry Weight (Total) | 28.516 | g |
| Solids, Percent | 88.3 | % |

Sample: MC3922-2 Analyzed: 28-SEP-11 by BF Method: SM21 2540 B MOD.
ClientID: SVE-36-2 (10-12.5) 092311

| | | |
|---|---|---|
| Wet Weight (Total) | 36.172 | g |
| Tare Weight | 21.968 | g |
| Dry Weight (Total) | 35.097 | g |
| Solids, Percent | 92.4 | % |

Sample: MC3922-3 Analyzed: 28-SEP-11 by BF Method: SM21 2540 B MOD.
ClientID: SVE-3 (38-40) 092311

| | | |
|---|---|---|
| Wet Weight (Total) | 37.237 | g |
| Tare Weight | 18.232 | g |
| Dry Weight (Total) | 34.412 | g |
| Solids, Percent | 85.1 | % |

Sample: MC3922-4 Analyzed: 28-SEP-11 by BF Method: SM21 2540 B MOD.
ClientID: VMP 46 (10-11) 092311

| | | |
|---|---|---|
| Wet Weight (Total) | 36.996 | g |
| Tare Weight | 26.232 | g |
| Dry Weight (Total) | 35.767 | g |
| Solids, Percent | 88.6 | % |

# SVE Install 2011 Data Review

**Laboratory SDG: MC3986**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 1/18/2012**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| VMP-46 (30-31.5) 092611 | VMP-46 (20-22.5) 092611 |
| VMP-46 (10-12.5) 092611 | VMP-37 (20-22.5) 092611 |
| VMP-40 (10-12.5) 092611 | VMP-37 (10-12.5) 092611 |
| VMP-40 (10-12.5) 092611 DUP | VMP-40 (20-22.5) 092611 |
| VMP-40 (30-31.5) 092611 | VMP-37 (30-31.5) 092611 |
| TB092611-1 | TB092611-2 |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS/LCSD recoveries were outside evaluation criteria. VOC surrogate recoveries for samples VMP-46 (30-31.5) 092611 and VMP-46 (10-12.5) 092611, and TPH-DRO/ORO surrogate recoveries for sample VMP-40 (10-12.5) 092611 were outside evaluation criteria. Although not indicated in the laboratory case narrative, chloroform was detected in the trip blank. The compound TPH-DRO was qualified due to field duplicate RPD outside evaluation criteria in field duplicate pair, VMP-40 (10-12.5) 092611/ VMP-40 (10-12.5) 092611 DUP. Professional judgment was used to qualify 2-butanone (MEK) and methylene chloride in several samples. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 1.0°C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required. Additionally, although VOC analysis was only requested for trip blank TB092611-1, both trip blanks TB092611-1 and TB092611-2 were analyzed for VOCs.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

Yes

| Blank ID | Parameter | Analyte | Concentration |
|---|---|---|---|
| TB092611-1 | VOCs | Chloroform | 1.9 ug/L |

Analytical data that were reported non-detect or at concentrations greater than five times (5X) the associated blank concentration did not require qualification.

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSP1816-BS | VOCs | Acetone | **133** | NA | 70-130 |
| MSP1816-BS | VOCs | Acrolein | **284** | NA | 70-130 |
| MSP1817-BS | VOCs | Acrolein | **354** | NA | 70-130 |
| MSP1817-BS | VOCs | n-Butylbenzene | **134** | NA | 70-130 |
| MSP1817-BS | VOCs | p-Isopropyltoluene | **132** | NA | 70-130 |
| MSN2094-BS/BSD | VOCs | Acetone | **216/193** | 11 | 70-130/25 |
| MSN2094-BS/BSD | VOCs | Acrolein | **267/246** | 8 | 70-130/25 |
| MSN2094-BS/BSD | VOCs | Acrylonitrile | **650/600** | 8 | 70-130/25 |
| MSN2094-BS/BSD | VOCs | 2-Butanone (MEK) | **198/174** | 12 | 70-130/25 |
| MSN2094-BS/BSD | VOCs | 2-Hexanone | **195/181** | 7 | 70-130/25 |
| MSN2094-BS/BSD | VOCs | 4-Methyl-2-pentanone (MIBK) | **136**/123 | 10 | 70-130/25 |
| MSN2094-BS/BSD | VOCs | Vinyl acetate | **148/135** | 9 | 70-130/25 |

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS MSN2094-BS/BSD was associated with trip blank samples TB092611-1 and TB092611-2. Trip blank samples are quality control samples and are not qualified.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| VMP-40 (20-22.5) 092611 | VOCs | n-Butylbenzene | **J** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

No

| Sample ID | Parameter | Surrogate | Recovery | Criteria |
|---|---|---|---|---|
| VMP-46 (30-31.5) 092611 Run #1 | VOCs | Toluene-$d_8$ | **144** | 70-130 |
| VMP-46 (30-31.5) 092611 Run #2 | VOCs | Toluene-$d_8$ | **139** | 70-130 |
| VMP-46 (30-31.5) 092611 Run #1 | VOCs | 4-Bromofluorobenzene | **138** | 70-130 |
| VMP-46 (30-31.5) 092611 Run #2 | VOCs | 4-Bromofluorobenzene | **138** | 70-130 |
| VMP-46 (10-12.5) 092611 Run #1 | VOCs | Toluene-$d_8$ | **135** | 70-130 |
| VMP-46 (10-12.5) 092611 Run #2 | VOCs | Toluene-$d_8$ | **144** | 70-130 |
| VMP-46 (10-12.5) 092611 Run #1 | VOCs | 4-Bromofluorobenzene | **135** | 70-130 |
| VMP-46 (10-12.5) 092611 Run #2 | VOCs | 4-Bromofluorobenzene | **148** | 70-130 |
| VMP-40 (10-12.5) 092611 Run #1 | TPH-DRO/ORO | o-Terphenyl | **26** | 40-140 |

Analytical data that required qualification based on surrogate data are in included in the table below. Analytical data reported as non-detect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| VMP-46 (30-31.5) 092611 | VOCs | Benzene | **J** |
| VMP-46 (30-31.5) 092611 | VOCs | 2-Butanone (MEK) | **J** |
| VMP-46 (30-31.5) 092611 | VOCs | n-Butylbenzene | **J** |
| VMP-46 (30-31.5) 092611 | VOCs | sec-Butylbenzene | **J** |
| VMP-46 (30-31.5) 092611 | VOCs | Ethylbenzene | **J** |
| VMP-46 (30-31.5) 092611 | VOCs | Isopropylbenzene | **J** |
| VMP-46 (30-31.5) 092611 | VOCs | Methyl tert butyl ether | **J** |
| VMP-46 (30-31.5) 092611 | VOCs | Naphthalene | **J** |
| VMP-46 (30-31.5) 092611 | VOCs | n-Propylbenzene | **J** |
| VMP-46 (30-31.5) 092611 | VOCs | Toluene | **J** |
| VMP-46 (30-31.5) 092611 | VOCs | 1,2,4-Trimethylbenzene | **J** |
| VMP-46 (30-31.5) 092611 | VOCs | 1,3,5-Trimethylbenzene | **J** |
| VMP-46 (30-31.5) 092611 | VOCs | m,p-Xylene | **J** |
| VMP-46 (30-31.5) 092611 | VOCs | o-Xylene | **J** |
| VMP-46 (30-31.5) 092611 | VOCs | Xylene (total) | **J** |
| VMP-46 (10-12.5) 092611 | VOCs | Benzene | **J** |
| VMP-46 (10-12.5) 092611 | VOCs | 2-Butanone (MEK) | **J** |
| VMP-46 (10-12.5) 092611 | VOCs | sec-Butylbenzene | **J** |
| VMP-46 (10-12.5) 092611 | VOCs | Ethylbenzene | **J** |

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| VMP-46 (10-12.5) 092611 | VOCs | Isopropylbenzene | **J** |
| VMP-46 (10-12.5) 092611 | VOCs | n-Propylbenzene | **J** |
| VMP-46 (10-12.5) 092611 | VOCs | Toluene | **J** |
| VMP-46 (10-12.5) 092611 | VOCs | 1,2,4-Trimethylbenzene | **J** |
| VMP-46 (10-12.5) 092611 | VOCs | 1,3,5-Trimethylbenzene | **J** |
| VMP-46 (10-12.5) 092611 | VOCs | m,p-Xylene | **J** |
| VMP-46 (10-12.5) 092611 | VOCs | o-Xylene | **J** |
| VMP-46 (10-12.5) 092611 | VOCs | Xylene (total) | **J** |
| VMP-40 (10-12.5) 092611 | TPH-DRO/ORO | TPH-DRO | **J** |
| VMP-40 (10-12.5) 092611 | TPH-DRO/ORO | TPH-ORO | **J** |

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

No

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

Yes

| Field ID | Field Duplicate ID |
|---|---|
| VMP-40 (10-12.5) 092611 | VMP-40 (10-12.5) 092611 DUP |

*Were field duplicates within evaluation criteria?*

No

| Field ID | Field Duplicate ID | Parameter | Analyte | RPD | Qualification |
|---|---|---|---|---|---|
| VMP-40 (10-12.5) 092611 | VMP-40 (10-12.5) 092611 DUP | TPH-DRO/ORO | TPH-DRO | **86** | **J/J** |

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

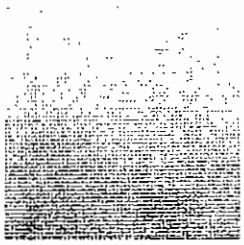
*Were additional qualifications applied?*

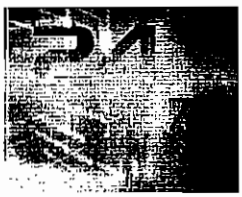
Yes, professional judgment was used to qualify the common laboratory contaminants 2-butanone (MEK) and methylene chloride reported at concentrations greater than two times (2X) the reporting limit (RL), since 2-butanone (MEK) and methylene chloride are not representative of site conditions.

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| VMP-46 (30-31.5) 092611 | 2-Butanone (MEK) | 18.4 ug/kg | **U** | Professional Judgment |
| VMP-46 (10-12.5) 092611 | 2-Butanone (MEK) | 51.0 ug/kg | **U** | Professional Judgment |
| VMP-40 (10-12.5) 092611 DUP | Methylene chloride | - | **U** | Professional Judgment |
| VMP-37 (30-31.5) 092611 | Methylene chloride | - | **U** | Professional Judgment |

New England ACCUTEST LABORATORIES

11/23/11





## Technical Report for

Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC3986

Sampling Date: 09/26/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **144**

Reviewed on 1/18/2012

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Reza Tand
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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# Sample Summary

Shell Oil

Job No: MC3986

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|
| MC3986-1 | 09/26/11 | 15:15 LR | 09/27/11 | SO | Soil | VMP46 (30-31.5)092611 |
| MC3986-2 | 09/26/11 | 15:00 LR | 09/27/11 | SO | Soil | VMP46 (20-22.5)092611 |
| MC3986-3 | 09/26/11 | 14:40 LR | 09/27/11 | SO | Soil | VMP46 (10-12.5)092611 |
| MC3986-4 | 09/26/11 | 12:55 LR | 09/27/11 | SO | Soil | VMP37 (20-22.5)092611 |
| MC3986-5 | 09/26/11 | 10:15 LR | 09/27/11 | SO | Soil | VMP40 (10-12.5)092611 |
| MC3986-6 | 09/26/11 | 12:45 LR | 09/27/11 | SO | Soil | VMP37 (10-12.5)092611 |
| MC3986-7 | 09/26/11 | 10:15 LR | 09/27/11 | SO | Soil | VMP40 (10-12.5)092611 DUP |
| MC3986-8 | 09/26/11 | 10:25 LR | 09/27/11 | SO | Soil | VMP40 (20-22.5)092611 |
| MC3986-9 | 09/26/11 | 10:35 LR | 09/27/11 | SO | Soil | VMP40 (30-31.5)092611 |
| MC3986-10 | 09/26/11 | 13:05 LR | 09/27/11 | SO | Soil | VMP37 (30-31.5)092611 |
| MC3986-11 | 09/26/11 | 17:00 LR | 09/27/11 | AQ | Trip Blank Water | TB092611-1 |
| MC3986-12 | 09/26/11 | 17:00 LR | 09/27/11 | AQ | Trip Blank Water | TB092611-2 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

ACCUTEST Laboratories

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC3986 |
| **Site:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Ra | **Report Date** | 10/18/2011 10:13:42 AM |

10 Sample(s), 2 Trip Blank(s) were collected on 09/26/2011 and were reeeived at Accutest on 09/27/2011 properly preserved, at 1 Deg. C and intact. These Samples received an Accutest job number of MC3986. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified ealibrations and quality control performanee criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSN2094

- All samples were analyzed within the reeommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC4026-2MS, MC4026-2MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for 2-Butanone (MEK), 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Aeetone, Acrolein, Acrylonitrile, Vinyl Acetate are outside eontrol limits. Assoeiated samples are non-detect for this eompound.
- MS/MSD Recovery(s) for Aerolein, Acrylonitrile, Vinyl Acetate are outside eontrol limits. Associated samples are non-detect for this compound.
- BSD Recovery(s) for 2-Butanone (MEK), 2-Hexanone, Acetone, Acrolein, Acrylonitrile, Vinyl Acetate are outside control limits. Associated samples are non-detect for this compound.

**Matrix** SO **Batch ID:** MSK1846

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC4123-1MS, MC4123-1MSD were used as the QC samples indicated.

**Matrix** SO **Batch ID:** MSP1816

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3921-2MS, MC3921-2MSD were used as the QC samples indicated.
- BS Recovery(s) for Acrolein are outside control limits. Associated samples are non-detect for this compound.
- MS/MSD Recovery(s) for Acetone are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- Matrix Spike Duplicate Recovery(s) for 1,1,2,2-Tetrachloroethane, 1,1-Dichloroethene, 1,2,3-Trichloropropane, 1,2-Dibromo-3-chloropropane, 1,4-Dioxane, 2-Butanone (MEK), 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Dichlorodifluoromethane, Isopropylbenzene are outside control limits. Outside eontrol limits due to possible matrix interferencc. Refer to Blank Spike.
- MC3921-2MS for 1,2,3-Trichloropropane, 1,4-Dioxane, Dichlorodifluoromethane: Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MC3986-1, 3 for 4-Bromofluorobenzene, Toluene-D8: Outside control limits due to possible matrix interferencc. Confirmed by reanalysis.
- BS Recovery(s) for Acetone are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Acrylonitrile. Acrolein are outside control limits. Associated samples are non-detect for this compound.

**Matrix** SO **Batch ID:** MSP1817

- All samples were analyzed within the recommended method holding time.

## Volatiles by GCMS By Method SW846 8260B

| Matrix SO | Batch ID: MSP1817 |
|---|---|

- All method blanks for this batch meet method specific criteria.
- Sample(s) MC4031-3MS, MC4031-3MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for n-Butylbenzene, p-Isopropyltoluene are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,1,2,2-Tetrachloroethane, 1,2,3-Trichloropropane, 1,2-Dibromo-3-chloropropane, 1,4-Dioxane, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acrylonitrile, Dichlorodifluoromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,2,3-Trichloropropane, 1,2-Dibromo-3-chloropropane, 1,4-Dioxane, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acrylonitrile are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MC3986-1,3: Confirmation run for surrogate recoveries.
- MSP1817-BS/MS/MSD for Acrolein: Outside control limits. Associated samples are non-detect for this compound.

## Volatiles by GC By Method SW846 8015

| Matrix SO | Batch ID: GBH1341 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC4194-1MS, MC4194-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Calibration standard GBH1340-CC1043 utilized the same files as GBH1341-CC1043.

| Matrix SO | Batch ID: GBH1342 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC4148-1MS, MC4148-1MSD were used as the QC samples indicated.
- Calibration standard GBH1342-CC1043 utilized the same files as GBH1343-CC1043.

## Extractables by GC By Method SW846-8015

| Matrix SO | Batch ID: OP26532 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC4031-3MS, MC4031-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MC3986-5 for o-Terphenyl: Outside control limits due to possible matrix interference.
- GBG1135-ECC1135 utilized the same file (BG31645) as GBG1138-CC1135. Calibration check standard GBG1138-ECC1135 is placed with instument run log GBG1138.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN36325 |
|---|---|

- Sample(s) MC3947-9DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature ou the cover page has authorized the release of this report(MC3986).

New England ACCUTEST LABORATORIES

## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP46 (30-31.5)092611 | | |
| **Lab Sample ID:** | MC3986-1 | **Date Sampled:** | 09/26/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/27/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | 84.5 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P55481.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| Run #2 [a] | P55506.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.63 g | 5.0 ml |
| Run #2 | 4.69 g | 5.0 ml |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 6.4 | 1.5 | ug/kg | |
| 107-02-8 | Acrolein | ND | 32 | 22 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6.4 | 2.6 | ug/kg | |
| 71-43-2 | Benzene | 66.4 J | 0.64 | 0.16 | ug/kg | J |
| 108-86-1 | Bromobenzene | ND | 6.4 | 0.24 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6.4 | 1.3 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.6 | 0.27 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.6 | 0.60 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.6 | 0.86 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ~~18.4~~ U | ~~6.4~~ 18.4 | 1.5 | ug/kg | U |
| 104-51-8 | n-Butylbenzene | 17.5 J | 6.4 | 1.6 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 3.3 J | 6.4 | 0.21 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 6.4 | 0.83 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 6.4 | 1.2 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.6 | 0.29 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.6 | 0.12 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6.4 | 0.33 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6.4 | 6.4 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.6 | 0.19 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6.4 | 0.28 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 6.4 | 0.18 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6.4 | 1.4 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6.4 | 6.4 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.6 | 0.83 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.6 | 0.24 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.6 | 0.19 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.6 | 0.18 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.6 | 0.18 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.6 | 0.44 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.6 | 0.19 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.6 | 0.19 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.6 | 0.41 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP46 (30-31.5)092611 | | |
| Lab Sample ID: | MC3986-1 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 84.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.6 | 0.35 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.6 | 0.32 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.6 | 0.29 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6.4 | 1.5 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6.4 | 0.24 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6.4 | 0.25 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.6 | 1.3 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.6 | 0.87 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 32 | 32 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6.4 | 4.0 | ug/kg | |
| 100-41-4 | Ethylbenzene | 44.7 J | 2.6 | 0.17 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 6.4 | 6.4 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6.4 | 1.3 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 6.0 J | 6.4 | 0.20 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | ND | 6.4 | 0.21 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | 3.9 J | 2.6 | 0.79 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6.4 | 1.1 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6.4 | 0.39 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.6 | 0.46 | ug/kg | |
| 91-20-3 | Naphthalene | 10.8 J | 6.4 | 6.4 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 12.2 J | 6.4 | 0.21 | ug/kg | |
| 100-42-5 | Styrene | ND | 6.4 | 0.64 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6.4 | 1.3 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.6 | 0.23 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.6 | 0.22 | ug/kg | |
| 108-88-3 | Toluene | 16.3 J | 6.4 | 0.23 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6.4 | 1.4 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6.4 | 6.4 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.6 | 0.23 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.6 | 0.32 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.6 | 0.25 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.6 | 1.2 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6.4 | 0.27 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 45.0 J | 6.4 | 0.20 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 22.8 J | 6.4 | 0.23 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 6.4 | 1.5 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.6 | 0.82 | ug/kg | |
| | m,p-Xylene | 50.1 J | 2.6 | 0.32 | ug/kg | |
| 95-47-6 | o-Xylene | 18.4 J | 2.6 | 0.24 | ug/kg | |
| 1330-20-7 | Xylene (total) | 68.5 J | 2.6 | 0.16 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP46 (30-31.5)092611 | | |
| Lab Sample ID: | MC3986-1 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 84.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 117% | 118% | 70-130% |
| 2037-26-5 | Toluene-D8 | 144% [b] | 139% [b] | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 138% [b] | 138% [b] | 70-130% |

(a) Confirmation run for surrogate recoveries.
(b) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP46 (30-31.5)092611 | | |
| Lab Sample ID: | MC3986-1 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8015 | Percent Solids: | 84.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24416.D | 1 | 10/07/11 | WS | n/a | n/a | GBH1341 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.52 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 14 | 2.7 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 83% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP46 (30-31.5)092611 | | |
| **Lab Sample ID:** | MC3986-1 | **Date Sampled:** | 09/26/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/27/11 |
| **Method:** | SW846-8015 SW846 3545 | **Percent Solids:** | 84.5 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31622.D | 1 | 10/10/11 | KD | 10/08/11 | OP26532 | GBG1136 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.9 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 19 | 14 | mg/kg | |
| | TPH (>C28-C40) | ND | 19 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 68% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP46 (20-22.5)092611 | | |
| Lab Sample ID: | MC3986-2 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 97.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P55482.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.59 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.6 | 5.6 | ug/kg | |
| 107-02-8 | Acrolein | ND | 28 | 19 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.6 | 2.2 | ug/kg | |
| 71-43-2 | Benzene | 2.8 | 0.56 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.6 | 0.21 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.6 | 1.2 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.2 | 0.23 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.2 | 0.53 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.2 | 0.75 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.6 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.6 | 1.4 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.6 | 0.18 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.6 | 0.73 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.6 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.2 | 0.25 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.2 | 0.10 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.6 | 0.29 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.6 | 5.6 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.2 | 0.17 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.6 | 0.24 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.6 | 0.16 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.6 | 1.2 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.6 | 5.6 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.2 | 0.73 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.2 | 0.21 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.2 | 0.17 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.2 | 0.38 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.2 | 0.17 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.2 | 0.16 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.2 | 0.35 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP46 (20-22.5)092611 | | |
| Lab Sample ID: | MC3986-2 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 97.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.2 | 0.30 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.2 | 0.28 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.2 | 0.25 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.6 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.6 | 0.21 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.6 | 0.21 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.2 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.2 | 0.76 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 28 | 28 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.6 | 3.5 | ug/kg | |
| 100-41-4 | Ethylbenzene | 5.6 | 2.2 | 0.14 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.6 | 5.6 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.6 | 1.2 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.6 | 0.18 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.6 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.2 | 0.69 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.6 | 0.94 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.6 | 0.34 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.2 | 0.40 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.6 | 5.6 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.6 | 0.18 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.6 | 0.56 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.6 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.2 | 0.19 | ug/kg | |
| 108-88-3 | Toluene | 4.6 | 5.6 | 0.20 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.6 | 1.2 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.6 | 5.6 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.2 | 0.28 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.2 | 0.22 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.2 | 1.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.6 | 0.23 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 4.4 | 5.6 | 0.18 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.6 | 0.20 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.6 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.2 | 0.72 | ug/kg | |
| | m,p-Xylene | 4.5 | 2.2 | 0.28 | ug/kg | |
| 95-47-6 | o-Xylene | 1.2 | 2.2 | 0.21 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 5.7 | 2.2 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP46 (20-22.5)092611 | | |
| Lab Sample ID: | MC3986-2 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 97.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 93% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 106% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 108% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP46 (20-22.5)092611 | | |
| Lab Sample ID: | MC3986-2 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8015 | Percent Solids: | 97.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24415.D | 1 | 10/07/11 | WS | n/a | n/a | GBH1341 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.16 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 12 | 2.4 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 84% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP46 (20-22.5)092611 | | |
| **Lab Sample ID:** | MC3986-2 | **Date Sampled:** | 09/26/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/27/11 |
| **Method:** | SW846-8015 SW846 3545 | **Percent Solids:** | 97.8 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31617.D | 1 | 10/10/11 | KD | 10/08/11 | OP26532 | GBG1135 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.5 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | 13 | mg/kg | |
| | TPH (> C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 76% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP46 (10-12.5)092611 | | |
| **Lab Sample ID:** | MC3986-3 | **Date Sampled:** | 09/26/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/27/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | 83.0 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P55483.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| Run #2 [a] | P55507.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.36 g | 5.0 ml |
| Run #2 | 4.68 g | 5.0 ml |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 6.9 | 1.6 | ug/kg | |
| 107-02-8 | Acrolein | ND | 35 | 23 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6.9 | 2.8 | ug/kg | |
| 71-43-2 | Benzene | 17.4 J | 0.69 | 0.17 | ug/kg | J |
| 108-86-1 | Bromobenzene | ND | 6.9 | 0.26 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6.9 | 1.4 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.8 | 0.29 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.8 | 0.65 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.8 | 0.93 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ~~51.0~~ u | ~~6.9~~ 51.0 | 1.6 | ug/kg | u |
| 104-51-8 | n-Butylbenzene | ND | 6.9 | 1.7 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 1.5 | 6.9 | 0.23 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 6.9 | 0.90 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 6.9 | 1.3 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.8 | 0.31 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.8 | 0.13 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6.9 | 0.36 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6.9 | 6.9 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.8 | 0.21 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6.9 | 0.30 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 6.9 | 0.19 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6.9 | 1.5 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6.9 | 6.9 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.8 | 0.90 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.8 | 0.26 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.8 | 0.21 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.8 | 0.20 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.8 | 0.19 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.8 | 0.47 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.8 | 0.21 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.8 | 0.20 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.8 | 0.44 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP46 (10-12.5)092611 | | |
| Lab Sample ID: | MC3986-3 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 83.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.8 | 0.37 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.8 | 0.35 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.8 | 0.32 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6.9 | 1.6 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6.9 | 0.25 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6.9 | 0.27 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.8 | 1.4 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.8 | 0.95 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 35 | 35 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6.9 | 4.3 | ug/kg | |
| 100-41-4 | Ethylbenzene | 16.5 J | 2.8 | 0.18 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 6.9 | 6.9 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6.9 | 1.4 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 2.2 J | 6.9 | 0.22 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | ND | 6.9 | 0.22 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.8 | 0.86 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6.9 | 1.2 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6.9 | 0.42 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.8 | 0.50 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 6.9 | 6.9 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 5.1 J | 6.9 | 0.22 | ug/kg | J |
| 100-42-5 | Styrene | ND | 6.9 | 0.69 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6.9 | 1.4 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.8 | 0.24 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.8 | 0.23 | ug/kg | |
| 108-88-3 | Toluene | 11.2 J | 6.9 | 0.25 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6.9 | 1.5 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6.9 | 6.9 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.8 | 0.25 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.8 | 0.35 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.8 | 0.27 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.8 | 1.3 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6.9 | 0.29 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 3.3 J | 6.9 | 0.22 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 4.4 J | 6.9 | 0.25 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 6.9 | 1.6 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.8 | 0.89 | ug/kg | |
| | m,p-Xylene | 10.4 J | 2.8 | 0.35 | ug/kg | |
| 95-47-6 | o-Xylene | 3.7 J | 2.8 | 0.26 | ug/kg | |
| 1330-20-7 | Xylene (total) | 14.1 J | 2.8 | 0.17 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP46 (10-12.5)092611 | | |
| Lab Sample ID: | MC3986-3 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 83.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 116% | 121% | 70-130% |
| 2037-26-5 | Toluene-D8 | 135% [b] | 144% [b] | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 135% [b] | 148% [b] | 70-130% |

(a) Confirmation run for surrogate recoveries.
(b) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP46 (10-12.5)092611 | | |
| Lab Sample ID: | MC3986-3 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8015 | Percent Solids: | 83.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24414.D | 1 | 10/07/11 | WS | n/a | n/a | GBH1341 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.17 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 15 | 2.9 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 88% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP46 (10-12.5)092611 | | |
| **Lab Sample ID:** | MC3986-3 | **Date Sampled:** | 09/26/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/27/11 |
| **Method:** | SW846-8015 SW846 3545 | **Percent Solids:** | 83.0 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31635.D | 1 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1135 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.9 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 19 | 14 | mg/kg | |
| | TPH (>C28-C40) | ND | 19 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 54% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP37 (20-22.5)092611 | | |
| Lab Sample ID: | MC3986-4 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 85.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55252.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.98 g | 10.0 ml | 2.5 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 25000 | 5800 | ug/kg | |
| 107-02-8 | Acrolein | ND | 130000 | 85000 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 25000 | 10000 | ug/kg | |
| 71-43-2 | Benzene | 6860 | 2500 | 630 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 25000 | 960 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 25000 | 5200 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 10000 | 1100 | ug/kg | |
| 75-25-2 | Bromoform | ND | 10000 | 2400 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 10000 | 3400 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 25000 | 6000 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 8770 | 25000 | 6300 | ug/kg | J |
| 135-98-8 | sec-Butylbenzene | 3990 | 25000 | 830 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 25000 | 3300 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 25000 | 4900 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 10000 | 1100 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 10000 | 470 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 25000 | 1300 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 25000 | 25000 | ug/kg | |
| 67-66-3 | Chloroform | ND | 10000 | 750 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 25000 | 1100 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 25000 | 700 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 25000 | 5600 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 25000 | 25000 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 10000 | 3300 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 10000 | 960 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 10000 | 760 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 10000 | 730 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 10000 | 700 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 10000 | 1700 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 10000 | 760 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 10000 | 730 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 10000 | 1600 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP37 (20-22.5)092611 | | |
| Lab Sample ID: | MC3986-4 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 85.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 10000 | 1400 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 10000 | 1300 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 10000 | 1100 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 25000 | 5800 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 25000 | 930 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 25000 | 970 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 10000 | 5000 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 10000 | 3400 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 130000 | 130000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 25000 | 16000 | ug/kg | |
| 100-41-4 | Ethylbenzene | 2870 | 10000 | 650 | ug/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 25000 | 25000 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 25000 | 5300 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 12200 | 25000 | 800 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 1760 | 25000 | 810 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 10000 | 3100 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 25000 | 4200 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 25000 | 1500 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 10000 | 1800 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 25000 | 25000 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 29700 | 25000 | 810 | ug/kg | |
| 100-42-5 | Styrene | ND | 25000 | 2500 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 25000 | 5100 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 10000 | 890 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 10000 | 850 | ug/kg | |
| 108-88-3 | Toluene | ND | 25000 | 900 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 25000 | 5500 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 25000 | 25000 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 10000 | 920 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 10000 | 1300 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 10000 | 980 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 10000 | 4600 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 25000 | 1100 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1880 | 25000 | 790 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1930 | 25000 | 910 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 25000 | 5900 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 10000 | 3200 | ug/kg | |
| | m,p-Xylene | 6720 | 10000 | 1300 | ug/kg | J |
| 95-47-6 | o-Xylene | ND | 10000 | 930 | ug/kg | |
| 1330-20-7 | Xylene (total) | 6720 | 10000 | 630 | ug/kg | J |

ND = Not detected MDL - Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP37 (20-22.5)092611 | | |
| Lab Sample ID: | MC3986-4 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 85.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 109% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 106% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 116% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP37 (20-22.5)092611 | | |
| Lab Sample ID: | MC3986-4 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8015 | Percent Solids: | 85.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24407.D | 1 | 10/06/11 | WS | n/a | n/a | GBH1341 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.58 g | 10.0 ml | 10.0 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 3320 | 170 | 33 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 94% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP37 (20-22.5)092611 | | |
| **Lab Sample ID:** | MC3986-4 | **Date Sampled:** | 09/26/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/27/11 |
| **Method:** | SW846-8015 SW846 3545 | **Percent Solids:** | 85.6 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31643.D | 1 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1135 |
| Run #2 | BG31652.D | 5 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1137 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.6 g | 1.0 ml |
| Run #2 | 15.6 g | 1.0 ml |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 2810 [a] | 94 | 71 | mg/kg | |
| | TPH (>C28-C40) | 136 | 19 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 48% | 56% | 40-140% |

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP40 (10-12.5)092611 | | |
| Lab Sample ID: | MC3986-5 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 93.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55253.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.30 g | 10.0 ml | 25.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 2500 | 590 | ug/kg | |
| 107-02-8 | Acrolein | ND | 13000 | 8600 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 2500 | 1000 | ug/kg | |
| 71-43-2 | Benzene | 246 | 250 | 64 | ug/kg | J |
| 108-86-1 | Bromobenzene | ND | 2500 | 97 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 2500 | 530 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 1000 | 110 | ug/kg | |
| 75-25-2 | Bromoform | ND | 1000 | 240 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 1000 | 340 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 2500 | 610 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 2500 | 640 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 531 | 2500 | 84 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 2500 | 330 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 2500 | 490 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 1000 | 110 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 1000 | 48 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 2500 | 130 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 2500 | 2500 | ug/kg | |
| 67-66-3 | Chloroform | ND | 1000 | 76 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 2500 | 110 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 2500 | 71 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 2500 | 570 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 2500 | 2500 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 1000 | 330 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 1000 | 97 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1000 | 77 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1000 | 74 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1000 | 71 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 1000 | 170 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1000 | 77 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1000 | 74 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1000 | 160 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP40 (10-12.5)092611 | | |
| Lab Sample ID: | MC3986-5 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 93.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1000 | 140 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1000 | 130 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 1000 | 120 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 2500 | 590 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 2500 | 94 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 2500 | 98 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1000 | 510 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1000 | 350 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 13000 | 13000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 2500 | 1600 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 1000 | 66 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 2500 | 2500 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 2500 | 530 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 701 | 2500 | 81 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 196 | 2500 | 82 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1000 | 320 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 2500 | 430 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 2500 | 160 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 1000 | 180 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 2500 | 2500 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 825 | 2500 | 82 | ug/kg | J |
| 100-42-5 | Styrene | ND | 2500 | 250 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 2500 | 510 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1000 | 90 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 1000 | 86 | ug/kg | |
| 108-88-3 | Toluene | ND | 2500 | 91 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 2500 | 560 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 2500 | 2500 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1000 | 93 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1000 | 130 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 1000 | 99 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 1000 | 470 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 2500 | 110 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 322 | 2500 | 80 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 327 | 2500 | 92 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 2500 | 600 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 1000 | 330 | ug/kg | |
| | m,p-Xylene | ND | 1000 | 130 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 1000 | 94 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 1000 | 64 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP40 (10-12.5)092611 | | |
| Lab Sample ID: | MC3986-5 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 93.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 110% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 108% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 112% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.5

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP40 (10-12.5)092611 | | |
| Lab Sample ID: | MC3986-5 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8015 | Percent Solids: | 93.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24408.D | 1 | 10/07/11 | WS | n/a | n/a | GBH1341 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.35 g | 10.0 ml | 10.0 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 483 | 130 | 24 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 96% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.5

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP40 (10-12.5)092611 | | |
| Lab Sample ID: | MC3986-5 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846-8015 SW846 3545 | Percent Solids: | 93.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31626.D | 1 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1136 |
| Run #2 | BG31651.D | 10 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1138 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.4 g | 1.0 ml |
| Run #2 | 15.4 g | 1.0 ml |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 5790 [a] J | 170 | 130 | mg/kg | |
| | TPH (>C28-C40) | 184 J | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 26% [b] | 85% | 40-140% |

(a) Result is from Run# 2
(b) Outside control limits due to possible matrix interference.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP37 (10-12.5)092611 | | |
| Lab Sample ID: | MC3986-6 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 85.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55254.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.47 g | 10.0 ml | 0.50 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 140000 | 32000 | ug/kg | |
| 107-02-8 | Acrolein | ND | 690000 | 470000 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 140000 | 56000 | ug/kg | |
| 71-43-2 | Benzene | 37300 | 14000 | 3500 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 140000 | 5300 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 140000 | 29000 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 55000 | 5800 | ug/kg | |
| 75-25-2 | Bromoform | ND | 55000 | 13000 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 55000 | 19000 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 140000 | 33000 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 140000 | 35000 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 6250 | 140000 | 4600 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 140000 | 18000 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 140000 | 27000 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 55000 | 6200 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 55000 | 2600 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 140000 | 7200 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 140000 | 140000 | ug/kg | |
| 67-66-3 | Chloroform | ND | 55000 | 4100 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 140000 | 6000 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 140000 | 3900 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 140000 | 31000 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 140000 | 140000 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 55000 | 18000 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 55000 | 5300 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 55000 | 4200 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 55000 | 4000 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 55000 | 3900 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 55000 | 9500 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 55000 | 4200 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 55000 | 4000 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 55000 | 8800 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP37 (10-12.5)092611 | | |
| Lab Sample ID: | MC3986-6 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 85.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 55000 | 7500 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 55000 | 7000 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 55000 | 6300 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 140000 | 32000 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 140000 | 5100 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 140000 | 5300 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 55000 | 28000 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 55000 | 19000 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 690000 | 690000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 140000 | 86000 | ug/kg | |
| 100-41-4 | Ethylbenzene | 205000 | 55000 | 3600 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 140000 | 140000 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 140000 | 29000 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 20000 | 140000 | 4400 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 10000 | 140000 | 4500 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 55000 | 17000 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 140000 | 23000 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 140000 | 8500 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 55000 | 10000 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 140000 | 140000 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 52000 | 140000 | 4500 | ug/kg | J |
| 100-42-5 | Styrene | ND | 140000 | 14000 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 140000 | 28000 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 55000 | 4900 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 55000 | 4700 | ug/kg | |
| 108-88-3 | Toluene | 358000 | 140000 | 5000 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 140000 | 31000 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 140000 | 140000 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 55000 | 5100 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 55000 | 7000 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 55000 | 5400 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 55000 | 25000 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 140000 | 5800 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 254000 | 140000 | 4400 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 68900 | 140000 | 5000 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 140000 | 33000 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 55000 | 18000 | ug/kg | |
| | m,p-Xylene | 551000 | 55000 | 7000 | ug/kg | |
| 95-47-6 | o-Xylene | 219000 | 55000 | 5100 | ug/kg | |
| 1330-20-7 | Xylene (total) | 769000 | 55000 | 3500 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.6

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP37 (10-12.5)092611 | | |
| Lab Sample ID: | MC3986-6 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 85.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 110% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 108% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 114% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.6

| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP37 (10-12.5)092611 | | |
| **Lab Sample ID:** | MC3986-6 | **Date Sampled:** | 09/26/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/27/11 |
| **Method:** | SW846 8015 | **Percent Solids:** | 85.9 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24409.D | 1 | 10/07/11 | WS | n/a | n/a | GBH1341 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.51 g | 10.0 ml | 10.0 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 8650 | 140 | 26 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 81% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP37 (10-12.5)092611 | | |
| **Lab Sample ID:** | MC3986-6 | **Date Sampled:** | 09/26/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/27/11 |
| **Method:** | SW846-8015 SW846 3545 | **Percent Solids:** | 85.9 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31637.D | 1 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1135 |
| Run #2 | BG31647.D | 20 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1138 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.2 g | 1.0 ml |
| Run #2 | 15.2 g | 1.0 ml |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 3900 [a] | 380 | 290 | mg/kg | |
| | TPH (>C28-C40) | 37.0 | 19 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 68% | 70% | 40-140% |

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP40 (10-12.5)092611 DUP | | |
| Lab Sample ID: | MC3986-7 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 95.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55255.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.43 g | 10.0 ml | 50.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 1200 | 280 | ug/kg | |
| 107-02-8 | Acrolein | ND | 6000 | 4100 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 1200 | 480 | ug/kg | |
| 71-43-2 | Benzene | 70.8 | 120 | 30 | ug/kg | J |
| 108-86-1 | Bromobenzene | ND | 1200 | 46 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 1200 | 250 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 480 | 51 | ug/kg | |
| 75-25-2 | Bromoform | ND | 480 | 110 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 480 | 160 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 1200 | 290 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 332 | 1200 | 300 | ug/kg | J |
| 135-98-8 | sec-Butylbenzene | 325 | 1200 | 40 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 1200 | 160 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 1200 | 230 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 480 | 54 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 480 | 23 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 1200 | 63 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 1200 | 1200 | ug/kg | |
| 67-66-3 | Chloroform | ND | 480 | 36 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 1200 | 52 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 1200 | 34 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 1200 | 270 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1200 | 1200 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 480 | 160 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 480 | 46 | ug/kg | |
| 95-50-1 | 1,2-Dichlorohenzene | ND | 480 | 36 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 480 | 35 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 480 | 34 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 480 | 82 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 480 | 37 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 480 | 35 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 480 | 77 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.7

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP40 (10-12.5)092611 DUP | | |
| Lab Sample ID: | MC3986-7 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 95.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 480 | 65 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 480 | 61 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 480 | 55 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 1200 | 280 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 1200 | 44 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 1200 | 46 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 480 | 240 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 480 | 170 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 6000 | 6000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 1200 | 750 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 480 | 31 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 1200 | 1200 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 1200 | 250 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 419 | 1200 | 38 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 124 | 1200 | 39 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 480 | 150 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 1200 | 200 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 1200 | 74 | ug/kg | |
| 75-09-2 | Methylene chloride | ~~296~~ U | 480 | 87 | ug/kg | J |
| 91-20-3 | Naphthalene | ND | 1200 | 1200 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 431 | 1200 | 39 | ug/kg | J |
| 100-42-5 | Styrene | ND | 1200 | 120 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1200 | 240 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 480 | 42 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 480 | 41 | ug/kg | |
| 108-88-3 | Toluene | ND | 1200 | 43 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1200 | 270 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1200 | 1200 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 480 | 44 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 480 | 61 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 480 | 47 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 480 | 220 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1200 | 51 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 1200 | 38 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 196 | 1200 | 44 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 1200 | 280 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 480 | 160 | ug/kg | |
| | m,p-Xylene | ND | 480 | 61 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 480 | 45 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 480 | 30 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP40 (10-12.5)092611 DUP | | |
| Lab Sample ID: | MC3986-7 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 95.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 107% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 107% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 112% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP40 (10-12.5)092611 DUP | | |
| Lab Sample ID: | MC3986-7 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8015 | Percent Solids: | 95.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24410.D | 1 | 10/07/11 | WS | n/a | n/a | GBH1341 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.79 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 349 | 11 | 2.1 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 98% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP40 (10-12.5)092611 DUP | | |
| **Lab Sample ID:** | MC3986-7 | **Date Sampled:** | 09/26/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/27/11 |
| **Method:** | SW846-8015 SW846 3545 | **Percent Solids:** | 95.5 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31624.D | 1 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1136 |
| Run #2 | BG31650.D | 5 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1137 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.6 g | 1.0 ml |
| Run #2 | 15.6 g | 1.0 ml |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 2310 [a] J | 84 | 63 | mg/kg | |
| | TPH (>C28-C40) | 78.7 | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 78% | 80% | 40-140% |

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP40 (20-22.5)092611 | | |
| Lab Sample ID: | MC3986-8 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 95.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P55508.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.86 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.4 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 27 | 18 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.4 | 2.2 | ug/kg | |
| 71-43-2 | Benzene | 9.5 | 0.54 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.4 | 0.21 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.4 | 1.1 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.2 | 0.23 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.2 | 0.51 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.2 | 0.73 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.4 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 13.4 | 5.4 | 1.4 | ug/kg | J |
| 135-98-8 | sec-Butylbenzene | 2.5 | 5.4 | 0.18 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 5.4 | 0.71 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.4 | 1.0 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.2 | 0.24 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.2 | 0.10 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.4 | 0.28 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.4 | 5.4 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.2 | 0.16 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.4 | 0.23 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.4 | 0.15 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.4 | 1.2 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.4 | 5.4 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.2 | 0.70 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.2 | 0.21 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.2 | 0.16 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.2 | 0.15 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.2 | 0.37 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.2 | 0.16 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.2 | 0.16 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.2 | 0.34 | ug/kg | |

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP40 (20-22.5)092611 | | |
| Lab Sample ID: | MC3986-8 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 95.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.2 | 0.29 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.2 | 0.27 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.2 | 0.25 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.4 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.4 | 0.20 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.4 | 0.21 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.2 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.2 | 0.74 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 27 | 27 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.4 | 3.4 | ug/kg | |
| 100-41-4 | Ethylbenzene | 5.5 | 2.2 | 0.14 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.4 | 5.4 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.4 | 1.1 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 2.9 | 5.4 | 0.17 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | ND | 5.4 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.2 | 0.67 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.4 | 0.91 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.4 | 0.33 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.2 | 0.39 | ug/kg | |
| 91-20-3 | Naphthalene | 35.1 | 5.4 | 5.4 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 3.8 | 5.4 | 0.17 | ug/kg | J |
| 100-42-5 | Styrene | ND | 5.4 | 0.54 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.4 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.2 | 0.19 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.2 | 0.18 | ug/kg | |
| 108-88-3 | Toluene | 5.7 | 5.4 | 0.19 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.4 | 1.2 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.4 | 5.4 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.2 | 0.20 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.2 | 0.27 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.2 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.2 | 1.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.4 | 0.23 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.9 | 5.4 | 0.17 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.4 | 0.20 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.4 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.2 | 0.70 | ug/kg | |
| | m,p-Xylene | 2.4 | 2.2 | 0.27 | ug/kg | |
| 95-47-6 | o-Xylene | 1.1 | 2.2 | 0.20 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 3.5 | 2.2 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP40 (20-22.5)092611 | | |
| Lab Sample ID: | MC3986-8 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 95.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 96% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 113% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 105% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP40 (20-22.5)092611 | | |
| Lab Sample ID: | MC3986-8 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8015 | Percent Solids: | 95.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24430.D | 1 | 10/08/11 | AF | n/a | n/a | GBH1342 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.85 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 5.11 | 14 | 2.6 | mg/kg | J |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 100% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP40 (20-22.5)092611 | | |
| **Lab Sample ID:** | MC3986-8 | **Date Sampled:** | 09/26/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/27/11 |
| **Method:** | SW846-8015 SW846 3545 | **Percent Solids:** | 95.2 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31612.D | 1 | 10/10/11 | KD | 10/08/11 | OP26532 | GBG1136 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.7 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 89.2 | 17 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 76% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP40 (30-31.5)092611 | | |
| Lab Sample ID: | MC3986-9 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 97.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P55485.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.45 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.8 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 29 | 20 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.8 | 2.3 | ug/kg | |
| 71-43-2 | Benzene | 12.9 | 0.58 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.8 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.8 | 1.2 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.3 | 0.24 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.3 | 0.54 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.3 | 0.78 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.8 | 1.4 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 12.2 | 5.8 | 1.5 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.8 | 0.19 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.8 | 0.75 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.8 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.3 | 0.26 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.3 | 0.11 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.8 | 0.30 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.8 | 5.8 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.3 | 0.17 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.8 | 0.25 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.8 | 0.16 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.8 | 1.3 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.8 | 5.8 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.3 | 0.75 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.3 | 0.22 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.3 | 0.17 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.3 | 0.17 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.3 | 0.16 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.3 | 0.39 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.3 | 0.18 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.3 | 0.17 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.3 | 0.37 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP40 (30-31.5)092611 | | |
| Lab Sample ID: | MC3986-9 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 97.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.3 | 0.31 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.3 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.3 | 0.26 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.8 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.8 | 0.21 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.8 | 0.22 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.3 | 1.2 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.3 | 0.79 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 29 | 29 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.8 | 3.6 | ug/kg | |
| 100-41-4 | Ethylbenzene | 3.6 | 2.3 | 0.15 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.8 | 5.8 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.8 | 1.2 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.8 | 0.18 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.8 | 0.19 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.3 | 0.71 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.8 | 0.97 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.8 | 0.35 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.3 | 0.42 | ug/kg | |
| 91-20-3 | Naphthalene | 21.6 | 5.8 | 5.8 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 1.8 | 5.8 | 0.19 | ug/kg | J |
| 100-42-5 | Styrene | ND | 5.8 | 0.58 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.8 | 1.2 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.3 | 0.20 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.3 | 0.19 | ug/kg | |
| 108-88-3 | Toluene | 3.7 | 5.8 | 0.21 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.8 | 1.3 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.8 | 5.8 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.3 | 0.21 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.3 | 0.29 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.3 | 0.23 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.3 | 1.1 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.8 | 0.24 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.8 | 0.18 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.8 | 0.21 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.8 | 1.4 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.3 | 0.74 | ug/kg | |
| | m,p-Xylene | 1.6 | 2.3 | 0.29 | ug/kg | J |
| 95-47-6 | o-Xylene | 0.65 | 2.3 | 0.21 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 2.3 | 2.3 | 0.15 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.9

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP40 (30-31.5)092611 | | |
| Lab Sample ID: | MC3986-9 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 97.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 86% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 109% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 102% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP40 (30-31.5)092611 | | |
| Lab Sample ID: | MC3986-9 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8015 | Percent Solids: | 97.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24412.D | 1 | 10/07/11 | WS | n/a | n/a | GBH1341 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.20 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 6.08 | 12 | 2.4 | mg/kg | J |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 88% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP40 (30-31.5)092611 | | |
| **Lab Sample ID:** | MC3986-9 | **Date Sampled:** | 09/26/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/27/11 |
| **Method:** | SW846-8015 SW846 3545 | **Percent Solids:** | 97.3 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31653.D | 1 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1138 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.6 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 16 | 12 | mg/kg | |
| | TPH (>C28-C40) | ND | 16 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 40% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP37 (30-31.5)092611 | | |
| Lab Sample ID: | MC3986-10 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 95.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55256.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.47 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 600 | 140 | ug/kg | |
| 107-02-8 | Acrolein | ND | 3000 | 2000 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 600 | 240 | ug/kg | |
| 71-43-2 | Benzene | ND | 60 | 15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 600 | 23 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 600 | 120 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 240 | 25 | ug/kg | |
| 75-25-2 | Bromoform | ND | 240 | 56 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 240 | 81 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 600 | 140 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 967 | 600 | 150 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 254 | 600 | 20 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 600 | 78 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 600 | 120 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 240 | 27 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 240 | 11 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 600 | 31 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 600 | 600 | ug/kg | |
| 67-66-3 | Chloroform | ND | 240 | 18 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 600 | 26 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 600 | 17 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 600 | 130 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 600 | 600 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 240 | 78 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 240 | 23 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 240 | 18 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 240 | 17 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 240 | 17 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 240 | 41 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 240 | 18 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 240 | 17 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 240 | 38 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.10

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP37 (30-31.5)092611 | | |
| Lab Sample ID: | MC3986-10 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 95.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 240 | 32 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 240 | 30 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 240 | 27 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 600 | 140 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 600 | 22 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 600 | 23 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 240 | 120 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 240 | 82 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 3000 | 3000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 600 | 370 | ug/kg | |
| 100-41-4 | Ethylbenzene | 3460 | 240 | I6 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 600 | 600 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 600 | 130 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 718 | 600 | 19 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | 254 | 600 | 19 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 240 | 74 | ug/kg | |
| 108-10-I | 4-Methyl-2-pentanone (MIBK) | ND | 600 | 100 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 600 | 37 | ug/kg | |
| 75-09-2 | Methylene chloride | ~~130~~ 11 | 240 | 43 | ug/kg | J |
| 91-20-3 | Naphthalene | 1950 | 600 | 600 | ug/kg | |
| 103-65-1 | n-Propylbenzene | I870 | 600 | I9 | ug/kg | |
| 100-42-5 | Styrene | ND | 600 | 60 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 600 | 120 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 240 | 21 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 240 | 20 | ug/kg | |
| 108-88-3 | Toluene | 95.6 | 600 | 21 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 600 | 130 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 600 | 600 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 240 | 22 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 240 | 30 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 240 | 23 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 240 | 110 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 600 | 25 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 8570 | 600 | 19 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1710 | 600 | 22 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 600 | 140 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 240 | 77 | ug/kg | |
| | m,p-Xylene | 2820 | 240 | 30 | ug/kg | |
| 95-47-6 | o-Xylene | 141 | 240 | 22 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 2970 | 240 | 15 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP37 (30-31.5)092611 | | |
| Lab Sample ID: | MC3986-10 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | 95.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 96% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 106% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 109% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP37 (30-31.5)092611 | | |
| Lab Sample ID: | MC3986-10 | Date Sampled: | 09/26/11 |
| Matrix: | SO - Soil | Date Received: | 09/27/11 |
| Method: | SW846 8015 | Percent Solids: | 95.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24413.D | 1 | 10/07/11 | WS | n/a | n/a | GBH1341 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.37 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 105 | 12 | 2.3 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 95% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP37 (30-31.5)092611 | | |
| **Lab Sample ID:** | MC3986-10 | **Date Sampled:** | 09/26/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/27/11 |
| **Method:** | SW846-8015 SW846 3545 | **Percent Solids:** | 95.4 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31618.D | 1 | 10/10/11 | KD | 10/08/11 | OP26532 | GBG1136 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.6 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 345 | 17 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 70% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.11

| | | | |
|---|---|---|---|
| Client Sample ID: | TB092611-1 | | |
| Lab Sample ID: | MC3986-11 | Date Sampled: | 09/26/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | N55831.D | 1 | 10/08/11 | DFT | n/a | n/a | MSN2094 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | 1.9 | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB092611-1 | | |
| Lab Sample ID: | MC3986-11 | Date Sampled: | 09/26/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.11

| | | | |
|---|---|---|---|
| Client Sample ID: | TB092611-1 | | |
| Lab Sample ID: | MC3986-11 | Date Sampled: | 09/26/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 95% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB092611-2 | | |
| Lab Sample ID: | MC3986-12 | Date Sampled: | 09/26/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | N55832.D | 1 | 10/08/11 | DFT | n/a | n/a | MSN2094 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB092611-2 | | |
| Lab Sample ID: | MC3986-12 | Date Sampled: | 09/26/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB092611-2 | | |
| Lab Sample ID: | MC3986-12 | Date Sampled: | 09/26/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/27/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 95% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES



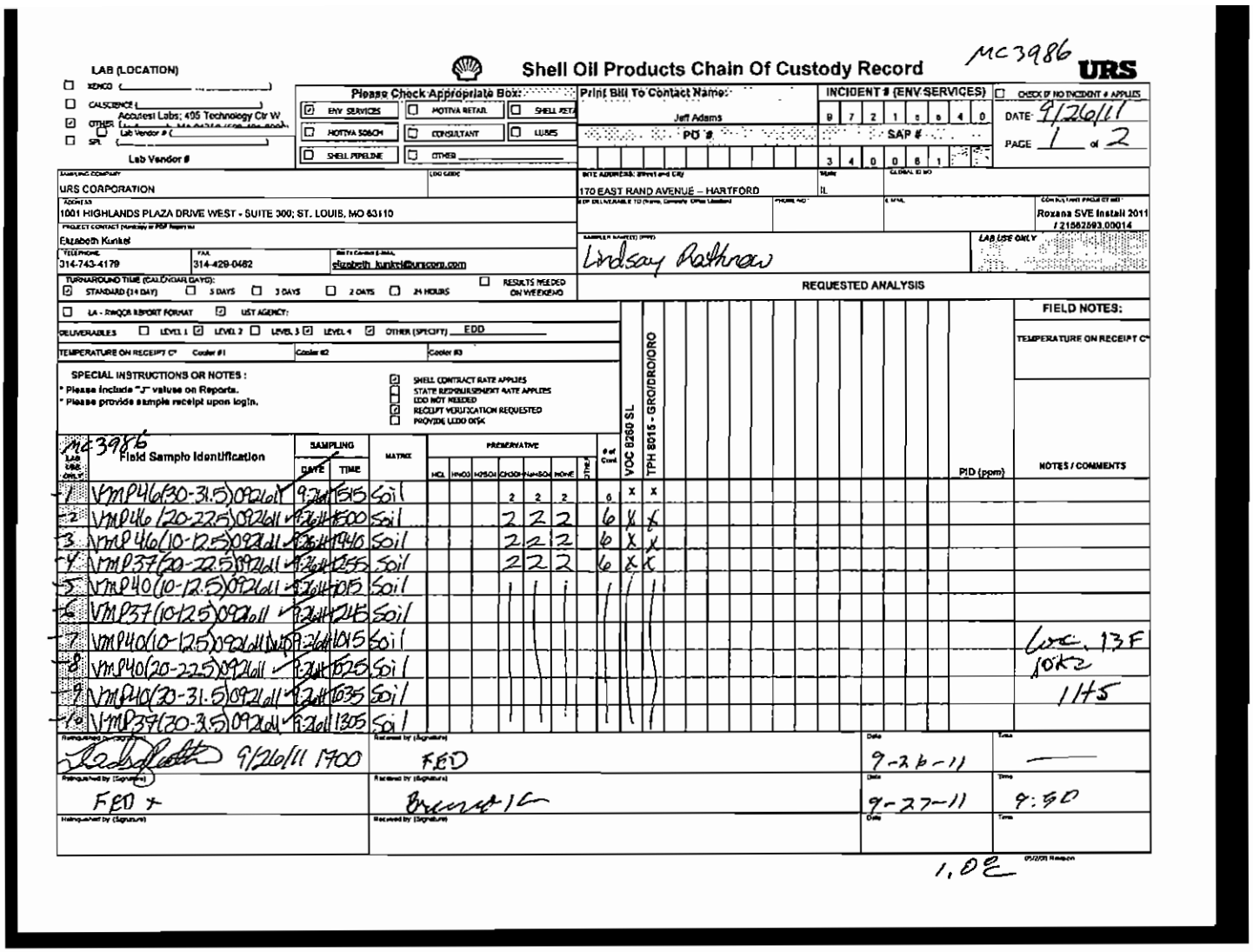
## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

MC3986



# Shell Oil Products Chain Of Custody Record

URS

LAB (LOCATION)
- ☐ XENCO ( )
- ☐ CALSCIENCE ( )
- ☑ OTHER Accutest Labs; 495 Technology Ctr W
- ☐ Lab Vendor # ( )
- ☐ SPL ( )

Lab Vendor #

Please Check Appropriate Box:
- ☑ ENV SERVICES
- ☐ MOTIVA RETAIL
- ☐ SHELL RETA
- ☐ MOTIVA SOBCH
- ☐ CONSULTANT
- ☐ LUBES
- ☐ SHELL PIPELINE
- ☐ OTHER

Print Bill To Contact Name: Jeff Adams

PO #

INCIDENT # (ENV SERVICES): 9 7 2 1 5 5 4 0

SAP #: 3 4 0 0 6 1

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 9/26/11

PAGE 1 of 2

SAMPLING COMPANY: URS CORPORATION

LOG CODE:

SITE ADDRESS: Street and City: 170 EAST RAND AVENUE – HARTFORD

State: IL

GLOBAL ID NO:

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300; ST. LOUIS, MO 63110

EDP DELIVERABLE TO (Name, Company, Office Location):

PHONE NO:

E-MAIL:

CONSULTANT PROJECT NO.: Roxana SVE Install 2011 / 21582593.00014

PROJECT CONTACT (Hardcopy or PDF Report to): Elizabeth Kunkel

TELEPHONE: 314-743-4179

FAX: 314-429-0462

SITE CONTACT E-MAIL: elizabeth_kunkel@urscorp.com

SAMPLER NAME(S) (PRINT): Lindsay Rathnow

LAB USE ONLY

TURNAROUND TIME (CALENDAR DAYS):
- ☑ STANDARD (14 DAY)
- ☐ 5 DAYS
- ☐ 3 DAYS
- ☐ 2 DAYS
- ☐ 24 HOURS
- ☐ RESULTS NEEDED ON WEEKEND

REQUESTED ANALYSIS

- ☐ LA - RWQCB REPORT FORMAT
- ☑ UST AGENCY:

DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C°: Cooler #1 | Cooler #2 | Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
- * Please include "J" values on Reports.
- * Please provide sample receipt upon login.

- ☑ SHELL CONTRACT RATE APPLIES
- ☐ STATE REIMBURSEMENT RATE APPLIES
- ☐ EDD NOT NEEDED
- ☑ RECEIPT VERIFICATION REQUESTED
- ☐ PROVIDE LEDD DISK

FIELD NOTES:

TEMPERATURE ON RECEIPT C°

MC3986

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | HCL | HNO3 | H2SO4 | CHOOH | NaHSO4 | NONE | OTHER | # of Cont | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | VMP46(30-31.5)092611 | 9/26/11 | 1515 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 2 | VMP46(20-22.5)092611 | 9/26/11 | 1500 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 3 | VMP46(10-12.5)092611 | 9/26/11 | 1440 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 4 | VMP37(20-22.5)092611 | 9/26/11 | 1255 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| 5 | VMP40(10-12.5)092611 | 9/26/11 | 1015 | Soil | | | | | | | | | | | | |
| 6 | VMP37(10-12.5)092611 | 9/26/11 | 1245 | Soil | | | | | | | | | | | | |
| 7 | VMP40(10-12.5)092611 | 9/26/11 | 1015 | Soil | | | | | | | | | | | | Loc. 13F |
| 8 | VMP40(20-22.5)092611 | 9/26/11 | 1025 | Soil | | | | | | | | | | | | 10K2 |
| 9 | VMP40(30-31.5)092611 | 9/26/11 | 1035 | Soil | | | | | | | | | | | | 1H5 |
| 10 | VMP37(30-31.5)092611 | 9/26/11 | 1305 | Soil | | | | | | | | | | | | |

| Relinquished by (Signature) | Received by (Signature) | Date | Time |
|---|---|---|---|
| [signature] 9/26/11 1700 | FED | 9-26-11 | — |
| FED + | [signature] | 9-27-11 | 9:50 |
| | | | |

1.0°C

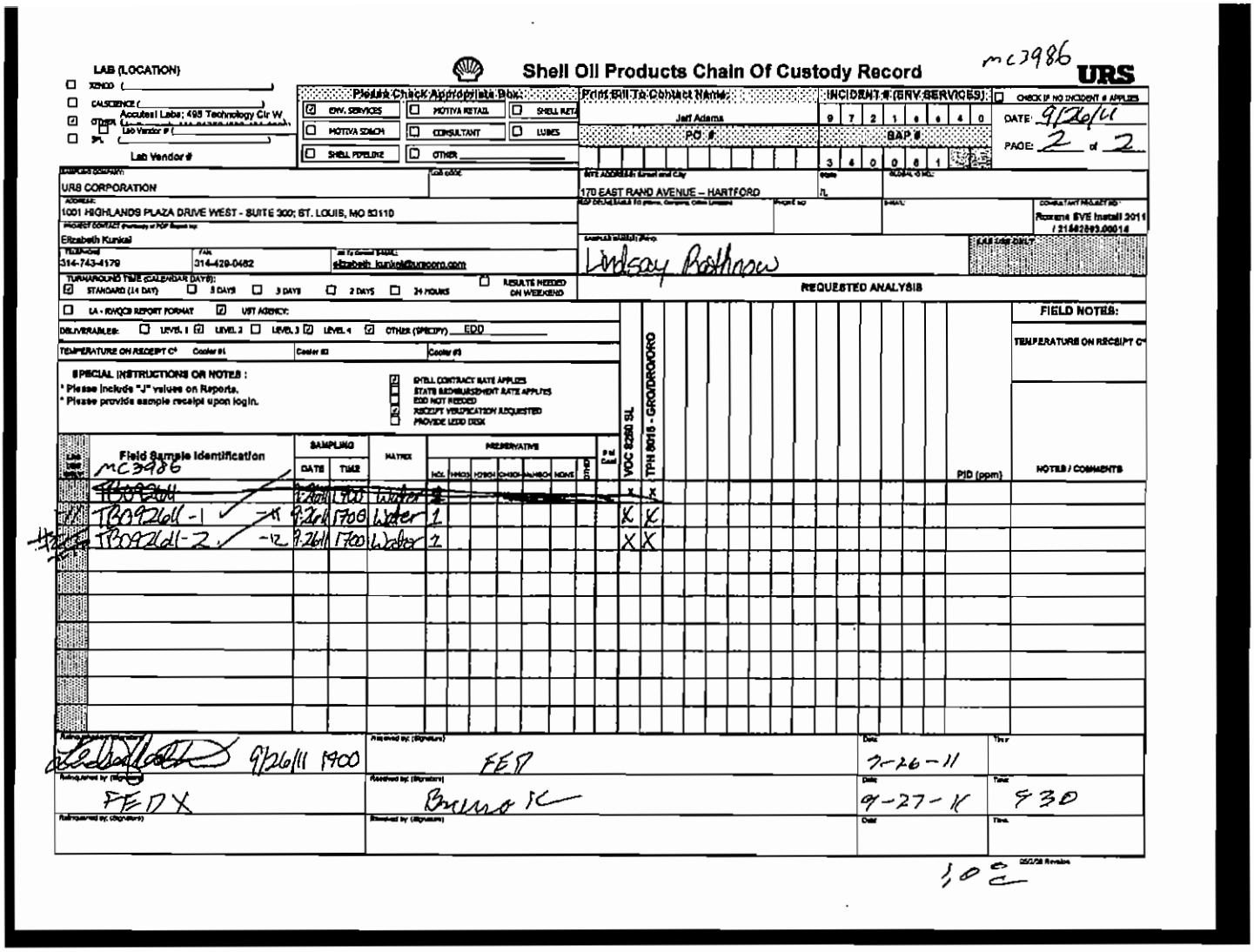
05/2/03 Revision

MC3986: Chain of Custody
Page 1 of 4

mc3986

# Shell Oil Products Chain Of Custody Record

URS



LAB (LOCATION)
- ☐ XENCO ( )
- ☐ CALSCIENCE ( )
- ☑ OTHER ( Accutest Labs; 495 Technology Ctr W )
- ☐ Lab Vendor # ( )
- ☐ SPL ( )

Lab Vendor #

Please Check Appropriate Box:
- ☑ ENV. SERVICES
- ☐ MOTIVA RETAIL
- ☐ SHELL RETA
- ☐ MOTIVA SOUCH
- ☐ CONSULTANT
- ☐ LUBES
- ☐ SHELL PIPELINE
- ☐ OTHER

Print Bill To Contact Name: Jeff Adams

PO #

INCIDENT # (ENV SERVICES): 9 7 2 1 6 4 4 0

BAP #: 3 4 0 0 6 1

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 9/26/11

PAGE: 2 of 2

SAMPLING COMPANY: URS CORPORATION

LOG CODE:

SITE ADDRESS: Street and City: 170 EAST RAND AVENUE – HARTFORD

State: IL

GLOBAL ID NO.:

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300; ST. LOUIS, MO 63110

PROJECT CONTACT (Hardcopy or PDF Report to): Elizabeth Kunkel

TELEPHONE: 314-743-4179

FAX: 314-429-0482

Job To Contact Name: elizabeth.kunkel@urscorp.com

SAMPLED MANUAL (Print): Lindsay Rathnow

LAB USE ONLY

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

REQUESTED ANALYSIS

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY:

DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C° Cooler #1 Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
- Please include "J" values on Reports.
- Please provide sample receipt upon login.

☑ SHELL CONTRACT RATE APPLIES
☐ STATE REIMBURSEMENT RATE APPLIES
☐ EDD NOT NEEDED
☑ RECEIPT VERIFICATION REQUESTED
☐ PROVIDE LEDD DESK

FIELD NOTES:

TEMPERATURE ON RECEIPT C°

| Lab Use Only | Field Sample Identification | Sampling Date | Sampling Time | Matrix | Preservative HCL | HNO3 | H2SO4 | CHSO4 | MeHSO4 | NONE | OTHER | # of Cont | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MC3986 | | | | | | | | | | | | | | | |
| | ~~TB09261~~ | ~~9/26/11~~ | ~~1700~~ | ~~Water~~ | ~~1~~ | | | | | | | | X | X | | |
| | TB09261-1 -11 | 9/26/11 | 1700 | Water | 1 | | | | | | | | X | X | | |
| | TB09261-2 -12 | 9/26/11 | 1700 | Water | 1 | | | | | | | | X | X | | |

| Relinquished by: (Signature) | Received by: (Signature) | Date | Time |
|---|---|---|---|
| [signature] 9/26/11 1900 | FED | 9-26-11 | |
| FEDX | Bruno K | 9-27-11 | 930 |
| | | | |

1.0 C

05/2/08 Revision

MC3986: Chain of Custody
Page 2 of 4

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC3986 Client: URS Immediate Client Services Action Required: Yes

Date / Time Received: 9/27/2011 Delivery Method:

Project: HART No. Coolers: Airbill #'s:

| Cooler Security | Y | or | N | | Y | or | N |
|---|---|---|---|---|---|---|---|
| 1. Custody Seals Present: | ☑ | | ☐ | 3. COC Present: | ☑ | | ☐ |
| 2. Custody Seals Intact: | ☑ | | ☐ | 4. Smpl Dates/Time OK | ☑ | | ☐ |

| Cooler Tempereture | Y | or | N |
|---|---|---|---|
| 1. Temp criteria achieved: | ☑ | | ☐ |
| 2. Cooler temp verification: | Infared gun | | |
| 3. Cooler media: | Ice (bag) | | |

| Quality Control Preservation | Y | N | N/A |
|---|---|---|---|
| 1. Trip Blank present / cooler: | ☐ | ☐ | |
| 2. Trip Blank listed on COC: | ☐ | ☐ | |
| 3. Samples preserved properly: | ☑ | ☐ | |
| 4. VOCs headspace free: | ☐ | ☐ | ☑ |

| Sample Integrity - Documentation | Y | or | N |
|---|---|---|---|
| 1. Sample labels present on bottles: | ☑ | | ☐ |
| 2. Container labeling complete: | ☑ | | ☐ |
| 3. Sample container label / COC agree: | ☑ | | ☐ |

| Sample Integrity - Condition | Y | or | N |
|---|---|---|---|
| 1. Sample rec'd within HT: | ☑ | | ☐ |
| 2. All containers accounted for: | ☑ | | ☐ |
| 3. Condition of sample: | Intact | | |

| Sample Integrity - Instructions | Y | N | N/A |
|---|---|---|---|
| 1. Analysis requested is clear: | ☑ | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | ☑ | |
| 3. Sufficient volume rec'd for analysis: | ☑ | ☐ | |
| 4. Compositing instructions clear: | ☐ | ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ | ☐ | ☑ |

Comments

-11, -12 Only 1- 40ml (HCL) each recd. For VOC analysis

ACCUTEST

## Sample Receipt Summary - Problem Resolution

Accutest Job Number: MC3986

CSR: Jeremy Vienneau  Response Date 9/26/2011

**Response:** Client advised Accutest to run just -11 for VOC analysis. See email.

4.1

4

Accutest Laboratories
V:508 481.6200

495 Technology Center West Bldg One
F: 508 481.7753

Marlborough, MA
www.accutest.com

**MC3986: Chain of Custody**
**Page 4 of 4**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3986

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3986-1 | Collected: 26-SEP-11 15:15 By: LR | | Received: 27-SEP-11 By: SAP | | | |
| VMP46 (30-31.5)092611 | | | | | | |
| MC3986-1 | SM21 2540 B MOD. | 29-SEP-11 | HS | | | %SOL |
| MC3986-1 | SW846 8260B | 06-OCT-11 14:37 | AMY | | | V8260SL |
| MC3986-1 | SW846 8015 | 07-OCT-11 05:16 | WS | | | V8015GRO |
| MC3986-1 | SW846 8260B | 07-OCT-11 14:17 | AMY | | | V8260SL |
| MC3986-1 | SW846-8015 | 10-OCT-11 23:35 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC3986-2 | Collected: 26-SEP-11 15:00 By: LR | | Received: 27-SEP-11 By: SAP | | | |
| VMP46 (20-22.5)092611 | | | | | | |
| MC3986-2 | SM21 2540 B MOD. | 29-SEP-11 | HS | | | %SOL |
| MC3986-2 | SW846 8260B | 06-OCT-11 15:05 | AMY | | | V8260SL |
| MC3986-2 | SW846 8015 | 07-OCT-11 04:37 | WS | | | V8015GRO |
| MC3986-2 | SW846-8015 | 10-OCT-11 21:02 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC3986-3 | Collected: 26-SEP-11 14:40 By: LR | | Received: 27-SEP-11 By: SAP | | | |
| VMP46 (10-12.5)092611 | | | | | | |
| MC3986-3 | SM21 2540 B MOD. | 29-SEP-11 | HS | | | %SOL |
| MC3986-3 | SW846 8260B | 06-OCT-11 15:33 | AMY | | | V8260SL |
| MC3986-3 | SW846 8015 | 07-OCT-11 03:57 | WS | | | V8015GRO |
| MC3986-3 | SW846 8260B | 07-OCT-11 14:45 | AMY | | | V8260SL |
| MC3986-3 | SW846-8015 | 11-OCT-11 05:10 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC3986-4 | Collected: 26-SEP-11 12:55 By: LR | | Received: 27-SEP-11 By: SAP | | | |
| VMP37 (20-22.5)092611 | | | | | | |
| MC3986-4 | SM21 2540 B MOD. | 29-SEP-11 | HS | | | %SOL |
| MC3986-4 | SW846 8260B | 06-OCT-11 19:44 | GK | | | V8260SL |
| MC3986-4 | SW846 8015 | 06-OCT-11 23:22 | WS | | | V8015GRO |
| MC3986-4 | SW846-8015 | 11-OCT-11 09:02 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC3986-4 | SW846-8015 | 11-OCT-11 13:25 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC3986-5 | Collected: 26-SEP-11 10:15 By: LR | | Received: 27-SEP-11 By: SAP | | | |
| VMP40 (10-12.5)092611 | | | | | | |
| MC3986-5 | SM21 2540 B MOD. | 29-SEP-11 | HS | | | %SOL |
| MC3986-5 | SW846 8260B | 06-OCT-11 20:11 | GK | | | V8260SL |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3986

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3986-5 | SW846 8015 | 07-OCT-11 00:01 | WS | | | V8015GRO |
| MC3986-5 | SW846-8015 | 11-OCT-11 01:25 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC3986-5 | SW846-8015 | 11-OCT-11 12:34 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC3986-6 | Collected: 26-SEP-11 12:45 By: LR | | Received: 27-SEP-11 By: SAP | | | |
| VMP37 (10-12.5)092611 | | | | | | |
| MC3986-6 | SM21 2540 B MOD. | 29-SEP-11 | HS | | | %SOL |
| MC3986-6 | SW846 8260B | 06-OCT-11 20:38 | GK | | | V8260SL |
| MC3986-6 | SW846 8015 | 07-OCT-11 00:41 | WS | | | V8015GRO |
| MC3986-6 | SW846-8015 | 11-OCT-11 06:05 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC3986-6 | SW846-8015 | 11-OCT-11 10:51 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC3986-7 | Collected: 26-SEP-11 10:15 By: LR | | Received: 27-SEP-11 By: SAP | | | |
| VMP40 (10-12.5)092611 DUP | | | | | | |
| MC3986-7 | SM21 2540 B MOD. | 29-SEP-11 | HS | | | %SOL |
| MC3986-7 | SW846 8260B | 06-OCT-11 21:05 | GK | | | V8260SL |
| MC3986-7 | SW846 8015 | 07-OCT-11 01:20 | WS | | | V8015GRO |
| MC3986-7 | SW846-8015 | 11-OCT-11 00:30 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC3986-7 | SW846-8015 | 11-OCT-11 12:34 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC3986-8 | Collected: 26-SEP-11 10:25 By: LR | | Received: 27-SEP-11 By: SAP | | | |
| VMP40 (20-22.5)092611 | | | | | | |
| MC3986-8 | SM21 2540 B MOD. | 29-SEP-11 | HS | | | %SOL |
| MC3986-8 | SW846 8260B | 07-OCT-11 15:14 | AMY | | | V8260SL |
| MC3986-8 | SW846 8015 | 08-OCT-11 20:34 | AF | | | V8015GRO |
| MC3986-8 | SW846-8015 | 10-OCT-11 19:19 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC3986-9 | Collected: 26-SEP-11 10:35 By: LR | | Received: 27-SEP-11 By: SAP | | | |
| VMP40 (30-31.5)092611 | | | | | | |
| MC3986-9 | SM21 2540 B MOD. | 29-SEP-11 | HS | | | %SOL |
| MC3986-9 | SW846 8260B | 06-OCT-11 16:29 | AMY | | | V8260SL |
| MC3986-9 | SW846 8015 | 07-OCT-11 02:39 | WS | | | V8015GRO |
| MC3986-9 | SW846-8015 | 11-OCT-11 13:25 | KD | 08-OCT-11 | MS | B8015DROORO |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC3986

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC3986-10 Collected: 26-SEP-11 13:05 By: LR Received: 27-SEP-11 By: SAP | | | | | | |
| VMP37 (30-31.5)092611 | | | | | | |
| MC3986-10 | SM21 2540 B MOD. | 29-SEP-11 | HS | | | %SOL |
| MC3986-10 | SW846 8260B | 06-OCT-11 21:32 | GK | | | V8260SL |
| MC3986-10 | SW846 8015 | 07-OCT-11 03:18 | WS | | | V8015GRO |
| MC3986-10 | SW846-8015 | 10-OCT-11 21:52 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC3986-11 Collected: 26-SEP-11 17:00 By: LR Received: 27-SEP-11 By: SAP | | | | | | |
| TB092611-1 | | | | | | |
| MC3986-11 | SW846 8260B | 08-OCT-11 16:36 | DFT | | | V8260SL |
| MC3986-12 Collected: 26-SEP-11 17:00 By: LR Received: 27-SEP-11 By: SAP | | | | | | |
| TB092611-2 | | | | | | |
| MC3986-12 | SW846 8260B | 08-OCT-11 17:04 | DFT | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/27/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3986-1.1 | Walk In Ref #9 | Hamid Siamak | 09/29/11 09:54 | Retrieve from Storage |
| MC3986-1.1 | Hamid Siamak | Walk In Ref #9 | 09/29/11 11:52 | Return to Storage |
| MC3986-1.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-1.2 | Walk In Ref #9 | Amirhossein Farvardin | 10/08/11 12:35 | Retrieve from Storage |
| MC3986-1.2 | Amirhossein Farvardin | Walk In Ref #9 | 10/08/11 19:12 | Return to Storage |
| MC3986-1.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-1.3 | VOC Ref #10 | Amy Min Yang | 09/30/11 16:30 | Retrieve from Storage |
| MC3986-1.3 | Amy Min Yang | VOC Ref #10 | 09/30/11 16:31 | Return to Storage |
| MC3986-1.3 | VOC Ref #10 | William Shao | 10/06/11 11:21 | Retrieve from Storage |
| MC3986-1.3 | William Shao | GCBH | 10/06/11 11:21 | Load on Instrument |
| MC3986-1.3 | GCBH | William Shao | 10/06/11 11:22 | Unload from Instrument |
| MC3986-1.3 | William Shao | VOC Ref #10 | 10/06/11 11:22 | Return to Storage |
| MC3986-1.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-1.5 | VOC Ref #10 | Amy Min Yang | 10/06/11 13:03 | Retrieve from Storage |
| MC3986-1.5 | Amy Min Yang | GCMSP | 10/06/11 13:03 | Load on Instrument |
| MC3986-1.5 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC3986-1.5 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC3986-1.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-1.6 | VOC Ref #10 | Amy Min Yang | 10/07/11 10:46 | Retrieve from Storage |
| MC3986-1.6 | Amy Min Yang | GCMSP | 10/07/11 10:47 | Load on Instrument |
| MC3986-1.6 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC3986-1.6 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC3986-1.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-2.1 | Walk In Ref #9 | Hamid Siamak | 09/29/11 09:54 | Retrieve from Storage |
| MC3986-2.1 | Hamid Siamak | Walk In Ref #9 | 09/29/11 11:52 | Return to Storage |
| MC3986-2.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-2.2 | Walk In Ref #9 | Amirhossein Farvardin | 10/08/11 12:35 | Retrieve from Storage |
| MC3986-2.2 | Amirhossein Farvardin | Walk In Ref #9 | 10/08/11 19:12 | Return to Storage |
| MC3986-2.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-2.3 | VOC Ref #10 | Amy Min Yang | 09/30/11 16:30 | Retrieve from Storage |
| MC3986-2.3 | Amy Min Yang | VOC Ref #10 | 09/30/11 16:31 | Return to Storage |
| MC3986-2.3 | VOC Ref #10 | William Shao | 10/06/11 11:21 | Retrieve from Storage |
| MC3986-2.3 | William Shao | GCBH | 10/06/11 11:21 | Load on Instrument |
| MC3986-2.3 | GCBH | William Shao | 10/06/11 11:22 | Unload from Instrument |
| MC3986-2.3 | William Shao | VOC Ref #10 | 10/06/11 11:22 | Return to Storage |
| MC3986-2.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |

# Accutest Internal Chain of Custody

Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/27/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3986-2.5 | VOC Ref #10 | Amy Min Yang | 10/06/11 13:03 | Retrieve from Storage |
| MC3986-2.5 | Amy Min Yang | GCMSP | 10/06/11 13:03 | Load on Instrument |
| MC3986-2.5 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC3986-2.5 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC3986-2.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-3.2 | Walk In Ref #9 | Amirhossein Farvardin | 10/08/11 12:35 | Retrieve from Storage |
| MC3986-3.2 | Amirhossein Farvardin | Walk In Ref #9 | 10/08/11 19:12 | Return to Storage |
| MC3986-3.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-3.4 | VOC Ref #10 | Amy Min Yang | 09/30/11 16:30 | Retrieve from Storage |
| MC3986-3.4 | Amy Min Yang | VOC Ref #10 | 09/30/11 16:31 | Return to Storage |
| MC3986-3.4 | VOC Ref #10 | William Shao | 10/06/11 11:21 | Retrieve from Storage |
| MC3986-3.4 | William Shao | GCBH | 10/06/11 11:21 | Load on Instrument |
| MC3986-3.4 | GCBH | William Shao | 10/06/11 11:22 | Unload from Instrument |
| MC3986-3.4 | William Shao | VOC Ref #10 | 10/06/11 11:22 | Return to Storage |
| MC3986-3.4 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-3.5 | VOC Ref #10 | Amy Min Yang | 10/06/11 13:03 | Retrieve from Storage |
| MC3986-3.5 | Amy Min Yang | GCMSP | 10/06/11 13:03 | Load on Instrument |
| MC3986-3.5 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC3986-3.5 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC3986-3.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-3.6 | VOC Ref #10 | Amy Min Yang | 10/07/11 10:46 | Retrieve from Storage |
| MC3986-3.6 | Amy Min Yang | GCMSP | 10/07/11 10:47 | Load on Instrument |
| MC3986-3.6 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC3986-3.6 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC3986-3.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-4.1 | Walk In Ref #9 | Hamid Siamak | 09/29/11 09:54 | Retrieve from Storage |
| MC3986-4.1 | Hamid Siamak | Walk In Ref #9 | 09/29/11 11:52 | Return to Storage |
| MC3986-4.1 | Walk In Ref #9 | Amirhossein Farvardin | 10/08/11 12:35 | Retrieve from Storage |
| MC3986-4.1 | Amirhossein Farvardin | Walk In Ref #9 | 10/08/11 19:12 | Return to Storage |
| MC3986-4.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-4.3 | VOC Ref #10 | Amy Min Yang | 09/30/11 16:30 | Retrieve from Storage |
| MC3986-4.3 | Amy Min Yang | VOC Ref #10 | 09/30/11 16:31 | Return to Storage |
| MC3986-4.3 | VOC Ref #10 | William Shao | 10/06/11 11:21 | Retrieve from Storage |
| MC3986-4.3 | William Shao | GCBH | 10/06/11 11:21 | Load on Instrument |
| MC3986-4.3 | GCBH | William Shao | 10/06/11 11:22 | Unload from Instrument |
| MC3986-4.3 | William Shao | VOC Ref #10 | 10/06/11 11:22 | Return to Storage |
| MC3986-4.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |

# Accutest Internal Chain of Custody

Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/27/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3986-4.4 | VOC Ref #10 | Gary Krasinski | 10/06/11 14:09 | Retrieve from Storage |
| MC3986-4.4 | Gary Krasinski | VOC Ref #10 | 10/07/11 11:48 | Return to Storage |
| MC3986-4.4 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-5.1 | Walk In Ref #9 | Hamid Siamak | 09/29/11 09:54 | Retrieve from Storage |
| MC3986-5.1 | Hamid Siamak | Walk In Ref #9 | 09/29/11 11:52 | Return to Storage |
| MC3986-5.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-5.3 | VOC Ref #10 | Amy Min Yang | 09/30/11 16:30 | Retrieve from Storage |
| MC3986-5.3 | Amy Min Yang | VOC Ref #10 | 09/30/11 16:31 | Return to Storage |
| MC3986-5.3 | VOC Ref #10 | William Shao | 10/06/11 11:21 | Retrieve from Storage |
| MC3986-5.3 | William Shao | GCBH | 10/06/11 11:21 | Load on Instrument |
| MC3986-5.3 | GCBH | William Shao | 10/06/11 11:22 | Unload from Instrument |
| MC3986-5.3 | William Shao | VOC Ref #10 | 10/06/11 11:22 | Return to Storage |
| MC3986-5.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-5.4 | VOC Ref #10 | Gary Krasinski | 10/06/11 14:09 | Retrieve from Storage |
| MC3986-5.4 | Gary Krasinski | VOC Ref #10 | 10/07/11 11:48 | Return to Storage |
| MC3986-5.4 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-6.1 | Walk In Ref #9 | Hamid Siamak | 09/29/11 09:54 | Retrieve from Storage |
| MC3986-6.1 | Hamid Siamak | Walk In Ref #9 | 09/29/11 11:52 | Return to Storage |
| MC3986-6.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-6.3 | VOC Ref #10 | Gary Krasinski | 10/06/11 14:09 | Retrieve from Storage |
| MC3986-6.3 | Gary Krasinski | VOC Ref #10 | 10/07/11 11:48 | Return to Storage |
| MC3986-6.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-6.4 | VOC Ref #10 | Amy Min Yang | 09/30/11 16:30 | Retrieve from Storage |
| MC3986-6.4 | Amy Min Yang | VOC Ref #10 | 09/30/11 16:31 | Return to Storage |
| MC3986-6.4 | VOC Ref #10 | William Shao | 10/06/11 11:21 | Retrieve from Storage |
| MC3986-6.4 | William Shao | GCBH | 10/06/11 11:21 | Load on Instrument |
| MC3986-6.4 | GCBH | William Shao | 10/06/11 11:22 | Unload from Instrument |
| MC3986-6.4 | William Shao | VOC Ref #10 | 10/06/11 11:22 | Return to Storage |
| MC3986-6.4 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-7.1 | Walk In Ref #9 | Hamid Siamak | 09/29/11 09:54 | Retrieve from Storage |
| MC3986-7.1 | Hamid Siamak | Walk In Ref #9 | 09/29/11 11:52 | Return to Storage |
| MC3986-7.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-7.3 | VOC Ref #10 | Amy Min Yang | 09/30/11 16:30 | Retrieve from Storage |
| MC3986-7.3 | Amy Min Yang | VOC Ref #10 | 09/30/11 16:31 | Return to Storage |
| MC3986-7.3 | VOC Ref #10 | William Shao | 10/06/11 11:21 | Retrieve from Storage |
| MC3986-7.3 | William Shao | GCBH | 10/06/11 11:21 | Load on Instrument |

# Accutest Internal Chain of Custody



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/27/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3986-7.3 | GCBH | William Shao | 10/06/11 11:22 | Unload from Instrument |
| MC3986-7.3 | William Shao | VOC Ref #10 | 10/06/11 11:22 | Return to Storage |
| MC3986-7.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-7.4 | VOC Ref #10 | Gary Krasinski | 10/06/11 14:09 | Retrieve from Storage |
| MC3986-7.4 | Gary Krasinski | VOC Ref #10 | 10/07/11 11:48 | Return to Storage |
| MC3986-7.4 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-8.1 | Walk In Ref #9 | Hamid Siamak | 09/29/11 09:54 | Retrieve from Storage |
| MC3986-8.1 | Hamid Siamak | Walk In Ref #9 | 09/29/11 11:52 | Return to Storage |
| MC3986-8.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-8.4 | VOC Ref #10 | Amy Min Yang | 09/30/11 16:30 | Retrieve from Storage |
| MC3986-8.4 | Amy Min Yang | VOC Ref #10 | 09/30/11 16:31 | Return to Storage |
| MC3986-8.4 | VOC Ref #10 | William Shao | 10/06/11 11:21 | Retrieve from Storage |
| MC3986-8.4 | William Shao | GCBH | 10/06/11 11:21 | Load on Instrument |
| MC3986-8.4 | GCBH | William Shao | 10/06/11 11:22 | Unload from Instrument |
| MC3986-8.4 | William Shao | VOC Ref #10 | 10/06/11 11:22 | Return to Storage |
| MC3986-8.4 | VOC Ref #10 | Anthony Franciosa | 10/08/11 11:45 | Retrieve from Storage |
| MC3986-8.4 | Anthony Franciosa | GCBH | 10/08/11 11:45 | Load on Instrument |
| MC3986-8.4 | GCBH | Anthony Franciosa | 10/09/11 09:13 | Unload from Instrument |
| MC3986-8.4 | Anthony Franciosa | VOC Ref #10 | 10/09/11 09:13 | Return to Storage |
| MC3986-8.4 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-8.5 | VOC Ref #10 | Amy Min Yang | 10/06/11 13:03 | Retrieve from Storage |
| MC3986-8.5 | Amy Min Yang | GCMSP | 10/06/11 13:03 | Load on Instrument |
| MC3986-8.5 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC3986-8.5 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC3986-8.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-8.6 | VOC Ref #10 | Amy Min Yang | 10/07/11 10:46 | Retrieve from Storage |
| MC3986-8.6 | Amy Min Yang | GCMSP | 10/07/11 10:47 | Load on Instrument |
| MC3986-8.6 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC3986-8.6 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC3986-8.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-9.1 | Walk In Ref #9 | Hamid Siamak | 09/29/11 09:54 | Retrieve from Storage |
| MC3986-9.1 | Hamid Siamak | Walk In Ref #9 | 09/29/11 11:52 | Return to Storage |
| MC3986-9.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-9.4 | VOC Ref #10 | Amy Min Yang | 09/30/11 16:30 | Retrieve from Storage |
| MC3986-9.4 | Amy Min Yang | VOC Ref #10 | 09/30/11 16:31 | Return to Storage |
| MC3986-9.4 | VOC Ref #10 | William Shao | 10/06/11 11:21 | Retrieve from Storage |
| MC3986-9.4 | William Shao | GCBH | 10/06/11 11:21 | Load on Instrument |

# Accutest Internal Chain of Custody



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/27/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC3986-9.4 | GCBH | William Shao | 10/06/11 11:22 | Unload from Instrument |
| MC3986-9.4 | William Shao | VOC Ref #10 | 10/06/11 11:22 | Return to Storage |
| MC3986-9.4 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-9.6 | VOC Ref #10 | Amy Min Yang | 10/06/11 13:03 | Retrieve from Storage |
| MC3986-9.6 | Amy Min Yang | GCMSP | 10/06/11 13:03 | Load on Instrument |
| MC3986-9.6 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC3986-9.6 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC3986-9.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-10.1 | Walk In Ref #9 | Hamid Siamak | 09/29/11 09:54 | Retrieve from Storage |
| MC3986-10.1 | Hamid Siamak | Walk In Ref #9 | 09/29/11 11:52 | Return to Storage |
| MC3986-10.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-10.2 | Walk In Ref #9 | Amirhossein Farvardin | 10/08/11 12:35 | Retrieve from Storage |
| MC3986-10.2 | Amirhossein Farvardin | Walk In Ref #9 | 10/08/11 19:12 | Return to Storage |
| MC3986-10.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-10.3 | VOC Ref #10 | Amy Min Yang | 09/30/11 16:30 | Retrieve from Storage |
| MC3986-10.3 | Amy Min Yang | VOC Ref #10 | 09/30/11 16:31 | Return to Storage |
| MC3986-10.3 | VOC Ref #10 | William Shao | 10/06/11 11:21 | Retrieve from Storage |
| MC3986-10.3 | William Shao | GCBH | 10/06/11 11:21 | Load on Instrument |
| MC3986-10.3 | GCBH | William Shao | 10/06/11 11:22 | Unload from Instrument |
| MC3986-10.3 | William Shao | VOC Ref #10 | 10/06/11 11:22 | Return to Storage |
| MC3986-10.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-10.4 | VOC Ref #10 | Gary Krasinski | 10/06/11 14:09 | Retrieve from Storage |
| MC3986-10.4 | Gary Krasinski | VOC Ref #10 | 10/07/11 11:48 | Return to Storage |
| MC3986-10.4 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-11.1 | VOC Ref #1 | Dana Tyron | 10/08/11 13:42 | Retrieve from Storage |
| MC3986-11.1 | Dana Tyron | GCMSN | 10/08/11 13:42 | Load on Instrument |
| MC3986-11.1 | GCMSN | Dana Tyron | 10/09/11 12:00 | Unload from Instrument |
| MC3986-11.1 | Dana Tyron | VOC Ref #1 | 10/09/11 12:02 | Return to Storage |
| MC3986-11.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC3986-12.1 | VOC Ref #1 | Dana Tyron | 10/08/11 13:42 | Retrieve from Storage |
| MC3986-12.1 | Dana Tyron | GCMSN | 10/08/11 13:42 | Load on Instrument |
| MC3986-12.1 | GCMSN | Dana Tyron | 10/09/11 12:00 | Unload from Instrument |
| MC3986-12.1 | Dana Tyron | VOC Ref #1 | 10/09/11 12:02 | Return to Storage |
| MC3986-12.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |

New England ACCUTEST LABORATORIES



## GC/MS Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-MB | P55474.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-1, MC3986-2, MC3986-3, MC3986-9

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary

Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-MB | P55474.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-1, MC3986-2, MC3986-3, MC3986-9

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-MB | P55474.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-1, MC3986-2, MC3986-3, MC3986-9

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 83% | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 111% | 70-130% |

# Method Blank Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1846-MB | K55241.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-4, MC3986-5, MC3986-6, MC3986-7, MC3986-10

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 58 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 850 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 250 | 100 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 6.3 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 9.5 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 52 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 10 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 24 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 34 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 59 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 63 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 8.3 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 33 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 48 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 11 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 4.7 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 13 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 250 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 7.4 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 11 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 7.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 56 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 250 | 250 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 33 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 100 | 9.6 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 7.5 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 7.2 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 7.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 17 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 7.6 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 7.3 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 16 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 13 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 11 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 58 | ug/kg | |

# Method Blank Summary

Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1846-MB | K55241.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-4, MC3986-5, MC3986-6, MC3986-7, MC3986-10

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 9.2 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 9.6 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 50 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 34 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 160 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 6.5 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 250 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 52 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 7.9 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.1 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 31 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 42 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 15 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 18 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 250 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 8.1 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 25 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 8.8 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 8.4 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 9.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 55 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 250 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 9.2 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 13 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 9.8 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 46 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 10 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 7.9 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 9.1 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 59 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 32 | ug/kg | |
| | m,p-Xylene | ND | 100 | 13 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 9.2 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 6.3 | ug/kg | |

# Method Blank Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1846-MB | K55241.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-4, MC3986-5, MC3986-6, MC3986-7, MC3986-10

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 109% | 70-130% |
| 2037-26-5 | Toluene-D8 | 106% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 110% | 70-130% |

# Method Blank Summary



Job Number: MC3986
Aecount: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1817-MB | P55500.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-8

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1817-MB | P55500.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-8

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1817-MB | P55500.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-8

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 81% | 70-130% |
| 2037-26-5 | Toluene-D8 | 100% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | 70-130% |

# Method Blank Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2094-MB | N55821.D | 1 | 10/08/11 | DFT | n/a | n/a | MSN2094 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-11, MC3986-12

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |

# Method Blank Summary

Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2094-MB | N55821.D | 1 | 10/08/11 | DFT | n/a | n/a | MSN2094 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-11, MC3986-12

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

# Method Blank Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2094-MB | N55821.D | 1 | 10/08/11 | DFT | n/a | n/a | MSN2094 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-11, MC3986-12

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 92% | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | 70-130% |

# Blank Spike Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-BS | P55472.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-1, MC3986-2, MC3986-3, MC3986-9

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 66.4 | 133* [a] | 70-130 |
| 107-02-8 | Acrolein | 250 | 710 | 284* [b] | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 53.1 | 106 | 70-130 |
| 71-43-2 | Benzene | 50 | 58.1 | 116 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 56.5 | 113 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 53.3 | 107 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 51.4 | 103 | 70-130 |
| 75-25-2 | Bromoform | 50 | 48.5 | 97 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 54.4 | 109 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 62.8 | 126 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 54.3 | 109 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 60.6 | 121 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 59.2 | 118 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 58.6 | 117 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 52.1 | 104 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 55.5 | 111 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 52.9 | 106 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 53.2 | 106 | 10-160 |
| 67-66-3 | Chloroform | 50 | 55.9 | 112 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 54.8 | 110 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 55.6 | 111 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 59.8 | 120 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 51.0 | 102 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 52.2 | 104 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 51.7 | 103 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 55.5 | 111 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 59.8 | 120 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 60.1 | 120 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 60.8 | 122 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 57.8 | 116 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 63.3 | 127 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 57.3 | 115 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 56.1 | 112 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 57.4 | 115 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 56.1 | 112 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 56.6 | 113 | 70-130 |

# Blank Spike Summary

Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-BS | P55472.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-1, MC3986-2, MC3986-3, MC3986-9

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 48.9 | 98 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 58.5 | 117 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 50.9 | 102 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 53.1 | 106 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 230 | 92 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 47.5 | 95 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 56.7 | 113 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 53.4 | 107 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 58.8 | 118 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 63.1 | 126 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 59.8 | 120 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 49.3 | 99 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 52.7 | 105 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 51.8 | 104 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 54.2 | 108 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 51.2 | 102 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 60.6 | 121 | 70-130 |
| 100-42-5 | Styrene | 50 | 56.8 | 114 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 52.7 | 105 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 55.3 | 111 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 59.3 | 119 | 70-130 |
| 108-88-3 | Toluene | 50 | 57.4 | 115 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 47.3 | 95 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 47.5 | 95 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 52.8 | 106 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 51.3 | 103 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 58.7 | 117 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 55.5 | 111 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 55.3 | 111 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 59.0 | 118 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 57.7 | 115 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 43.8 | 88 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 51.1 | 102 | 70-130 |
| | m,p-Xylene | 100 | 116 | 116 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 57.4 | 115 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 173 | 115 | 70-130 |

# Blank Spike Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-BS | P55472.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-1, MC3986-2, MC3986-3, MC3986-9

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 90% | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1817-BS | P55498.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-8

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 55.3 | 111 | 70-130 |
| 107-02-8 | Acrolein | 250 | 886 | 354* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 59.8 | 120 | 70-130 |
| 71-43-2 | Benzene | 50 | 63.7 | 127 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 59.0 | 118 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 57.3 | 115 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 56.4 | 113 | 70-130 |
| 75-25-2 | Bromoform | 50 | 51.0 | 102 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 56.4 | 113 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 52.9 | 106 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 66.8 | 134* b | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 64.3 | 129 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 61.9 | 124 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 60.5 | 121 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 55.1 | 110 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 59.6 | 119 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 54.7 | 109 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 56.0 | 112 | 10-160 |
| 67-66-3 | Chloroform | 50 | 59.5 | 119 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 57.6 | 115 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 57.6 | 115 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 62.9 | 126 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 56.3 | 113 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 53.7 | 107 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 56.1 | 112 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 59.6 | 119 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 63.3 | 127 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 64.3 | 129 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 63.0 | 126 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 61.3 | 123 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 60.7 | 121 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 62.4 | 125 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 61.8 | 124 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 60.6 | 121 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 62.0 | 124 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 60.9 | 122 | 70-130 |

# Blank Spike Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1817-BS | P55498.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-8

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 53.6 | 107 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 64.0 | 128 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 54.9 | 110 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 57.4 | 115 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 290 | 116 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 53.3 | 107 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 60.4 | 121 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 60.2 | 120 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 59.5 | 119 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 65.2 | 130 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 66.2 | 132* b | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 56.6 | 113 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 59.5 | 119 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 58.4 | 117 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 58.5 | 117 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 49.6 | 99 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 62.8 | 126 | 70-130 |
| 100-42-5 | Styrene | 50 | 61.5 | 123 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 54.8 | 110 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 58.8 | 118 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 61.5 | 123 | 70-130 |
| 108-88-3 | Toluene | 50 | 62.7 | 125 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 61.4 | 123 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 62.0 | 124 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 54.9 | 110 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 57.3 | 115 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 62.4 | 125 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 58.2 | 116 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 58.9 | 118 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 62.3 | 125 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 60.7 | 121 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 50.1 | 100 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 55.0 | 110 | 70-130 |
| | m,p-Xylene | 100 | 122 | 122 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 61.7 | 123 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 184 | 123 | 70-130 |

# Blank Spike Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1817-BS | P55498.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-8

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dihromofluoromethane | 95% | 70-130% |
| 2037-26-5 | Toluene-D8 | 113% | 70-130% |
| 460-00-4 | 4-Bromofluorohenzene | 98% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(h) Outside control limits. Blank Spike meets program technical requirements.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1846-BS | K55238.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |
| MSK1846-BSD | K55239.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-4, MC3986-5, MC3986-6, MC3986-7, MC3986-10

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 2540 | 102 | 2550 | 102 | 0 | 70-130/25 |
| 107-02-8 | Acrolein | 12500 | 16300 | 130 | 16100 | 129 | 1 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 2500 | 2350 | 94 | 2310 | 92 | 2 | 70-130/25 |
| 71-43-2 | Benzene | 2500 | 2450 | 98 | 2370 | 95 | 3 | 70-130/25 |
| 108-86-1 | Bromobenzene | 2500 | 2530 | 101 | 2480 | 99 | 2 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 2500 | 2460 | 98 | 2440 | 98 | 1 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 2500 | 2540 | 102 | 2480 | 99 | 2 | 70-130/25 |
| 75-25-2 | Bromoform | 2500 | 2710 | 108 | 2680 | 107 | 1 | 70-130/25 |
| 74-83-9 | Bromomethane | 2500 | 2400 | 96 | 2310 | 92 | 4 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 2720 | 109 | 2700 | 108 | 1 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 2500 | 2530 | 101 | 2410 | 96 | 5 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2490 | 100 | 2420 | 97 | 3 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2440 | 98 | 2370 | 95 | 3 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 2500 | 2570 | 103 | 2460 | 98 | 4 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2490 | 100 | 2380 | 95 | 5 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 2500 | 2690 | 108 | 2600 | 104 | 3 | 70-130/25 |
| 75-00-3 | Chloroethane | 2500 | 2550 | 102 | 2490 | 100 | 2 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 980 | 39 | 967 | 39 | 1 | 10-160/25 |
| 67-66-3 | Chloroform | 2500 | 2440 | 98 | 2360 | 94 | 3 | 70-130/25 |
| 74-87-3 | Chloromethane | 2500 | 2390 | 96 | 2300 | 92 | 4 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2430 | 97 | 2390 | 96 | 2 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2540 | 102 | 2450 | 98 | 4 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 2500 | 2040 | 82 | 2050 | 82 | 0 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 2500 | 2820 | 113 | 2760 | 110 | 2 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 2500 | 2680 | 107 | 2620 | 105 | 2 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2560 | 102 | 2510 | 100 | 2 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2520 | 101 | 2440 | 98 | 3 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2530 | 101 | 2440 | 98 | 4 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 2620 | 105 | 2480 | 99 | 5 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2420 | 97 | 2350 | 94 | 3 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2430 | 97 | 2360 | 94 | 3 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2520 | 101 | 2430 | 97 | 4 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2330 | 93 | 2270 | 91 | 3 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2450 | 98 | 2400 | 96 | 2 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2450 | 98 | 2340 | 94 | 5 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2580 | 103 | 2500 | 100 | 3 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1846-BS | K55238.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |
| MSK1846-BSD | K55239.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-4, MC3986-5, MC3986-6, MC3986-7, MC3986-10

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2770 | 111 | 2640 | 106 | 5 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2530 | 101 | 2370 | 95 | 7 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2570 | 103 | 2490 | 100 | 3 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2770 | 111 | 2670 | 107 | 4 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 12500 | 12700 | 102 | 11900 | 95 | 7 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2510 | 100 | 2420 | 97 | 4 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 2500 | 2700 | 108 | 2570 | 103 | 5 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2390 | 96 | 2320 | 93 | 3 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 2500 | 2980 | 119 | 2860 | 114 | 4 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 2500 | 2880 | 115 | 2800 | 112 | 3 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2590 | 104 | 2470 | 99 | 5 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2340 | 94 | 2300 | 92 | 2 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 2370 | 95 | 2350 | 94 | 1 | 70-130/25 |
| 74-95-3 | Methylene bromide | 2500 | 2480 | 99 | 2450 | 98 | 1 | 70-130/25 |
| 75-09-2 | Methylene chloride | 2500 | 2520 | 101 | 2460 | 98 | 2 | 70-130/25 |
| 91-20-3 | Naphthalene | 2500 | 2150 | 86 | 2120 | 85 | 1 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 2500 | 2500 | 100 | 2420 | 97 | 3 | 70-130/25 |
| 100-42-5 | Styrene | 2500 | 2740 | 110 | 2650 | 106 | 3 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2750 | 110 | 2670 | 107 | 3 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2450 | 98 | 2410 | 96 | 2 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 2500 | 2770 | 111 | 2610 | 104 | 6 | 70-130/25 |
| 108-88-3 | Toluene | 2500 | 2530 | 101 | 2420 | 97 | 4 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 2170 | 87 | 2110 | 84 | 3 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2330 | 93 | 2290 | 92 | 2 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2430 | 97 | 2340 | 94 | 4 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2470 | 99 | 2430 | 97 | 2 | 70-130/25 |
| 79-01-6 | Trichloroethene | 2500 | 2540 | 102 | 2400 | 96 | 6 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2450 | 98 | 2330 | 93 | 5 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2410 | 96 | 2360 | 94 | 2 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2460 | 98 | 2400 | 96 | 2 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2440 | 98 | 2360 | 94 | 3 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 2500 | 1930 | 77 | 1900 | 76 | 2 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 2500 | 2190 | 88 | 2060 | 82 | 6 | 70-130/25 |
| | m,p-Xylene | 5000 | 5430 | 109 | 5220 | 104 | 4 | 70-130/25 |
| 95-47-6 | o-Xylene | 2500 | 2690 | 108 | 2580 | 103 | 4 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 7500 | 8120 | 108 | 7810 | 104 | 4 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1846-BS | K55238.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |
| MSK1846-BSD | K55239.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-4, MC3986-5, MC3986-6, MC3986-7, MC3986-10

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 103% | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 110% | 105% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 104% | 103% | 70-130% |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2094-BS | N55818.D | 1 | 10/08/11 | DFT | n/a | n/a | MSN2094 |
| MSN2094-BSD | N55819.D | 1 | 10/08/11 | DFT | n/a | n/a | MSN2094 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-11, MC3986-12

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 108 | 216* a | 96.6 | 193* a | 11 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 668 | 267* a | 614 | 246* a | 8 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 325 | 650* a | 300 | 600* a | 8 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 53.4 | 107 | 51.9 | 104 | 3 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 53.9 | 108 | 54.4 | 109 | 1 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 51.6 | 103 | 50.5 | 101 | 2 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 57.6 | 115 | 56.0 | 112 | 3 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 50.4 | 101 | 49.2 | 98 | 2 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 51.4 | 103 | 53.3 | 107 | 4 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 98.8 | 198* a | 87.2 | 174* a | 12 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 56.1 | 112 | 56.4 | 113 | 1 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 55.7 | 111 | 55.4 | 111 | 1 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 55.3 | 111 | 54.3 | 109 | 2 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 54.4 | 109 | 52.5 | 105 | 4 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 60.5 | 121 | 59.6 | 119 | 1 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 53.0 | 106 | 52.2 | 104 | 2 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 55.0 | 110 | 53.7 | 107 | 2 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 55.3 | 111 | 53.9 | 108 | 3 | 70-130/25 |
| 67-66-3 | Chloroform | 50 | 53.2 | 106 | 51.6 | 103 | 3 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 47.2 | 94 | 45.4 | 91 | 4 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 52.8 | 106 | 52.4 | 105 | 1 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 55.5 | 111 | 54.9 | 110 | 1 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 58.9 | 118 | 54.6 | 109 | 8 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 58.7 | 117 | 59.9 | 120 | 2 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 56.2 | 112 | 55.1 | 110 | 2 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 53.6 | 107 | 53.4 | 107 | 0 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 53.0 | 106 | 52.9 | 106 | 0 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 54.0 | 108 | 53.3 | 107 | 1 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 51.3 | 103 | 49.8 | 100 | 3 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 56.9 | 114 | 54.8 | 110 | 4 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 53.1 | 106 | 51.4 | 103 | 3 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 60.8 | 122 | 60.0 | 120 | 1 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 51.4 | 103 | 49.5 | 99 | 4 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 54.2 | 108 | 52.8 | 106 | 3 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 55.3 | 111 | 53.9 | 108 | 3 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 53.8 | 108 | 53.0 | 106 | 1 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2094-BS | N55818.D | 1 | 10/08/11 | DFT | n/a | n/a | MSN2094 |
| MSN2094-BSD | N55819.D | 1 | 10/08/11 | DFT | n/a | n/a | MSN2094 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-11, MC3986-12

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 56.9 | 114 | 50.6 | 101 | 12 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 55.8 | 112 | 53.4 | 107 | 4 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 54.0 | 108 | 52.1 | 104 | 4 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 59.3 | 119 | 55.5 | 111 | 7 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 310 | 124 | 279 | 112 | 11 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 51.2 | 102 | 47.8 | 96 | 7 | 77-137/25 |
| 100-41-4 | Ethylbenzene | 50 | 54.0 | 108 | 54.3 | 109 | 1 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 55.3 | 111 | 53.9 | 108 | 3 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 97.3 | 195* a | 90.4 | 181* a | 7 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 63.5 | 127 | 62.9 | 126 | 1 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 57.2 | 114 | 57.1 | 114 | 0 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 64.1 | 128 | 58.0 | 116 | 10 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 67.9 | 136* a | 61.7 | 123 | 10 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 55.5 | 111 | 54.4 | 109 | 2 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 54.7 | 109 | 52.9 | 106 | 3 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 56.3 | 113 | 53.4 | 107 | 5 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 55.7 | 111 | 55.4 | 111 | 1 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 55.7 | 111 | 56.5 | 113 | 1 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 55.3 | 111 | 55.5 | 111 | 0 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 58.4 | 117 | 54.3 | 109 | 7 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 54.5 | 109 | 54.1 | 108 | 1 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 55.4 | 111 | 54.8 | 110 | 1 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 57.3 | 115 | 56.5 | 113 | 1 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 56.1 | 112 | 55.6 | 111 | 1 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 54.9 | 110 | 53.2 | 106 | 3 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 55.8 | 112 | 54.4 | 109 | 3 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 55.0 | 110 | 52.9 | 106 | 4 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 51.4 | 103 | 49.6 | 99 | 4 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 57.2 | 114 | 53.1 | 106 | 7 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 53.3 | 107 | 52.8 | 106 | 1 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 54.6 | 109 | 53.5 | 107 | 2 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 74.1 | 148* a | 67.4 | 135* a | 9 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 47.4 | 95 | 44.8 | 90 | 6 | 70-130/25 |
| | m,p-Xylene | 100 | 108 | 108 | 109 | 109 | 1 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 54.7 | 109 | 54.5 | 109 | 0 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 163 | 109 | 164 | 109 | 1 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2094-BS | N55818.D | 1 | 10/08/11 | DFT | n/a | n/a | MSN2094 |
| MSN2094-BSD | N55819.D | 1 | 10/08/11 | DFT | n/a | n/a | MSN2094 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-11, MC3986-12

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 93% | 93% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 93% | 94% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3921-2MS | P55477.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2MSD | P55478.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2 | P55476.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-1, MC3986-2, MC3986-3, MC3986-9

| CAS No. | Compound | MC3921-2 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 179 | | 62.6 | 91.8 | -139* [a] | 107 | -116* [a] | 15 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 313 | 1670 | 533* [b] | 1870 | 605* [b] | 11 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 62.6 | 91.5 | 146* [b] | 103 | 167* [b] | 12 | 70-130/30 |
| 71-43-2 | Benzene | 8.4 | | 62.6 | 78.2 | 111 | 79.6 | 115 | 2 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 62.6 | 69.3 | 111 | 72.1 | 117 | 4 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 62.6 | 70.8 | 113 | 71.5 | 116 | 1 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 62.6 | 66.8 | 107 | 68.7 | 111 | 3 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 62.6 | 66.4 | 106 | 70.0 | 113 | 5 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 62.6 | 65.1 | 104 | 66.5 | 108 | 2 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 62.6 | 75.1 | 120 | 90.0 | 146* [c] | 18 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 62.6 | 68.1 | 109 | 75.9 | 123 | 11 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 62.6 | 71.2 | 114 | 76.3 | 123 | 7 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 62.6 | 71.4 | 114 | 75.6 | 122 | 6 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 62.6 | 80.3 | 128 | 81.2 | 131* [c] | 1 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 62.6 | 68.1 | 109 | 69.0 | 112 | 1 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 62.6 | 70.0 | 112 | 71.8 | 116 | 3 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 62.6 | 69.4 | 111 | 70.5 | 114 | 2 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 62.6 | 77.6 | 124 | 81.8 | 132 | 5 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 62.6 | 72.9 | 116 | 74.5 | 120 | 2 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 62.6 | 76.2 | 122 | 76.5 | 124 | 0 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 62.6 | 68.3 | 109 | 70.4 | 114 | 3 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 62.6 | 74.5 | 119 | 76.0 | 123 | 2 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 62.6 | 79.8 | 127 | 93.8 | 152* [c] | 16 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 62.6 | 66.8 | 107 | 69.2 | 112 | 4 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 62.6 | 72.4 | 116 | 76.3 | 123 | 5 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 62.6 | 65.9 | 105 | 70.6 | 114 | 7 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 62.6 | 72.3 | 115 | 74.9 | 121 | 4 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 62.6 | 71.6 | 114 | 76.6 | 124 | 7 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 62.6 | 90.0 | 144* [c] | 88.8 | 144* [c] | 1 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 62.6 | 77.9 | 124 | 78.7 | 127 | 1 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 62.6 | 73.5 | 117 | 77.2 | 125 | 5 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 62.6 | 80.8 | 129 | 83.7 | 135* [c] | 4 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 62.6 | 74.7 | 119 | 75.5 | 122 | 1 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 62.6 | 77.7 | 124 | 77.7 | 126 | 0 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 62.6 | 70.2 | 112 | 72.3 | 117 | 3 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 62.6 | 77.6 | 124 | 80.3 | 130 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3921-2MS | P55477.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2MSD | P55478.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2 | P55476.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-1, MC3986-2, MC3986-3, MC3986-9

| CAS No. | Compound | MC3921-2 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 62.6 | 64.3 | 103 | 66.4 | 107 | 3 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 62.6 | 77.7 | 124 | 78.6 | 127 | 1 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 62.6 | 64.9 | 104 | 67.5 | 109 | 4 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 62.6 | 70.1 | 112 | 72.5 | 117 | 3 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 313 | 411 | 131* c | 543 | 176* c | 28 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 62.6 | 66.6 | 106 | 75.4 | 122 | 12 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 13.4 | | 62.6 | 78.0 | 103 | 80.6 | 109 | 3 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 62.6 | 58.0 | 93 | 66.3 | 107 | 13 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 62.6 | 79.2 | 126 | 84.7 | 137* c | 7 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | 1.7 | J | 62.6 | 80.8 | 126 | 83.8 | 133* c | 4 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 62.6 | 71.6 | 114 | 77.7 | 126 | 8 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 62.6 | 70.4 | 112 | 77.0 | 125 | 9 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 62.6 | 77.3 | 123 | 91.5 | 148* c | 17 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 62.6 | 71.5 | 114 | 74.0 | 120 | 3 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 62.6 | 72.7 | 116 | 73.9 | 120 | 2 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 62.6 | 61.8 | 99 | 66.9 | 108 | 8 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 4.0 | J | 62.6 | 75.7 | 114 | 79.6 | 122 | 5 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 62.6 | 70.9 | 113 | 73.6 | 119 | 4 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 62.6 | 65.5 | 105 | 67.2 | 109 | 3 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 62.6 | 80.8 | 129 | 88.0 | 142* c | 9 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 62.6 | 74.9 | 120 | 75.2 | 122 | 0 | 70-130/30 |
| 108-88-3 | Toluene | 10.0 | | 62.6 | 78.8 | 110 | 80.1 | 113 | 2 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 62.6 | 52.7 | 84 | 60.7 | 98 | 14 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 62.6 | 58.3 | 93 | 64.8 | 105 | 11 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 62.6 | 71.3 | 114 | 69.9 | 113 | 2 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 62.6 | 71.2 | 114 | 71.6 | 116 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 62.6 | 76.3 | 122 | 77.2 | 125 | 1 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 62.6 | 75.6 | 121 | 76.5 | 124 | 1 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 62.6 | 85.1 | 136* c | 95.9 | 155* c | 12 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 3.1 | J | 62.6 | 72.9 | 111 | 75.8 | 118 | 4 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 3.0 | J | 62.6 | 71.5 | 109 | 73.5 | 114 | 3 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 62.6 | 67.2 | 107 | 72.2 | 117 | 7 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 62.6 | 66.3 | 106 | 68.1 | 110 | 3 | 70-130/30 |
| | m,p-Xylene | 8.1 | | 125 | 149 | 112 | 152 | 116 | 2 | 70-130/30 |
| 95-47-6 | o-Xylene | 2.8 | | 62.6 | 74.0 | 114 | 75.5 | 118 | 2 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 10.9 | | 188 | 223 | 113 | 228 | 117 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3921-2MS | P55477.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2MSD | P55478.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2 | P55476.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-1, MC3986-2, MC3986-3, MC3986-9

| CAS No. | Surrogate Recoveries | MS | MSD | MC3921-2 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 93% | 95% | 121% | 70-130% |
| 2037-26-5 | Toluene-D8 | 102% | 110% | 144%* [d] | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 94% | 99% | 150%* [d] | 70-130% |

(a) Outside control limits due to high level in sample relative to spike amount.
(b) Outside control limits. Associated samples are non-detect for this compound.
(c) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(d) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4123-1MS | K55250.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |
| MC4123-1MSD | K55251.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |
| MC4123-1 | K55242.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-4, MC3986-5, MC3986-6, MC3986-7, MC3986-10

| CAS No. | Compound | MC4123-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 2820 | 2680 | 95 | 2620 | 93 | 2 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 14100 | 11000 | 78 | 11300 | 80 | 3 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 2820 | 2610 | 93 | 2560 | 91 | 2 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 2820 | 2680 | 95 | 2640 | 94 | 2 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 2820 | 2870 | 102 | 2840 | 101 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 2820 | 2750 | 98 | 2680 | 95 | 3 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 2820 | 2810 | 100 | 2770 | 98 | 1 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 2820 | 3060 | 109 | 3020 | 107 | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 2820 | 2530 | 90 | 2440 | 87 | 4 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 2820 | 2840 | 101 | 2820 | 100 | 1 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 2820 | 2880 | 102 | 2860 | 102 | 1 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 2820 | 2910 | 103 | 2810 | 100 | 3 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 2820 | 2880 | 102 | 2790 | 99 | 3 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 2820 | 2530 | 90 | 2430 | 86 | 4 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 2820 | 2710 | 96 | 2660 | 94 | 2 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 2820 | 3060 | 109 | 2920 | 104 | 5 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 2820 | 2610 | 93 | 2520 | 89 | 4 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 2820 | 2710 | 96 | 2690 | 95 | 1 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 2820 | 2750 | 98 | 2640 | 94 | 4 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 2820 | 2560 | 91 | 2450 | 87 | 4 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 2820 | 2850 | 101 | 2780 | 99 | 2 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 2820 | 2860 | 102 | 2770 | 98 | 3 | 70-130/30 |
| 96-12-8 | 1,2-Dihromo-3-chloropropane | ND | | 2820 | 2370 | 84 | 2380 | 84 | 0 | 70-130/30 |
| 124-48-1 | Dihromochloromethane | ND | | 2820 | 3070 | 109 | 2990 | 106 | 3 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 2820 | 2960 | 105 | 2890 | 103 | 2 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 2820 | 2960 | 105 | 2960 | 105 | 0 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 2820 | 2870 | 102 | 2860 | 102 | 0 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 2820 | 2870 | 102 | 2840 | 101 | 1 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 2820 | 2690 | 95 | 2550 | 91 | 5 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 2820 | 2680 | 95 | 2580 | 92 | 4 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 2820 | 2710 | 96 | 2640 | 94 | 3 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 2820 | 2460 | 87 | 2420 | 86 | 2 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 2820 | 2600 | 92 | 2560 | 91 | 2 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 2820 | 2570 | 91 | 2490 | 88 | 3 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 2820 | 2770 | 98 | 2700 | 96 | 3 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 2820 | 2930 | 104 | 2840 | 101 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4123-1MS | K55250.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |
| MC4123-1MSD | K55251.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |
| MC4123-1 | K55242.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-4, MC3986-5, MC3986-6, MC3986-7, MC3986-10

| CAS No. | Compound | MC4123-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 2820 | 2980 | 106 | 2810 | 100 | 6 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 2820 | 2690 | 95 | 2590 | 92 | 4 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 2820 | 2860 | 102 | 2800 | 99 | 2 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 2820 | 2860 | 102 | 2780 | 99 | 3 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 14100 | 13300 | 94 | 13800 | 98 | 4 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 2820 | 2870 | 102 | 2820 | 100 | 2 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 2820 | 3020 | 107 | 2920 | 104 | 3 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 2820 | 2850 | 101 | 2800 | 99 | 2 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 2820 | 2940 | 104 | 2940 | 104 | 0 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 2820 | 2900 | 103 | 2830 | 100 | 2 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 2820 | 2860 | 102 | 2820 | 100 | 1 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 2820 | 2700 | 96 | 2610 | 93 | 3 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 2820 | 2740 | 97 | 2690 | 95 | 2 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 2820 | 2810 | 100 | 2760 | 98 | 2 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 2820 | 2690 | 95 | 2650 | 94 | 1 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 2820 | 2540 | 90 | 2570 | 91 | 1 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 2820 | 2840 | 101 | 2790 | 99 | 2 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 2820 | 3160 | 112 | 3040 | 108 | 4 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 2820 | 3100 | 110 | 3020 | 107 | 3 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 2820 | 2890 | 103 | 2840 | 101 | 2 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 2820 | 3000 | 107 | 2880 | 102 | 4 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 2820 | 2770 | 98 | 2730 | 97 | 1 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 2820 | 2570 | 91 | 2600 | 92 | 1 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 2820 | 2680 | 95 | 2680 | 95 | 0 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 2820 | 2740 | 97 | 2640 | 94 | 4 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 2820 | 2860 | 102 | 2780 | 99 | 3 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 2820 | 2780 | 99 | 2710 | 96 | 3 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 2820 | 2710 | 96 | 2570 | 91 | 5 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 2820 | 2830 | 100 | 2760 | 98 | 3 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 2820 | 2900 | 103 | 2820 | 100 | 3 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 2820 | 2880 | 102 | 2820 | 100 | 2 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 2820 | 2680 | 95 | 2560 | 91 | 5 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 2820 | 2570 | 91 | 2470 | 88 | 4 | 70-130/30 |
| | m,p-Xylene | ND | | 5630 | 6110 | 108 | 5910 | 105 | 3 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 2820 | 3020 | 107 | 2920 | 104 | 3 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 8450 | 9130 | 108 | 8830 | 104 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4123-1MS | K55250.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |
| MC4123-1MSD | K55251.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |
| MC4123-1 | K55242.D | 1 | 10/06/11 | GK | n/a | n/a | MSK1846 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-4, MC3986-5, MC3986-6, MC3986-7, MC3986-10

| CAS No. | Surrogate Recoveries | MS | MSD | MC4123-1 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 102% | 99% | 107% | 70-130% |
| 2037-26-5 | Toluene-D8 | 108% | 105% | 105% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 104% | 103% | 110% | 70-130% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4031-3MS | P55502.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |
| MC4031-3MSD | P55503.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |
| MC4031-3 | P55501.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-8

| CAS No. | Compound | MC4031-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 61.4 | 62.1 | 101 | 47.1 | 78 | 27 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 307 | 1270 | 414* [a] | 1190 | 393* [a] | 7 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 61.4 | 92.6 | 151* [b] | 88.6 | 146* [b] | 4 | 70-130/30 |
| 71-43-2 | Benzene | 2.1 | | 61.4 | 73.5 | 116 | 69.8 | 112 | 5 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 61.4 | 65.3 | 106 | 62.4 | 103 | 5 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 61.4 | 71.4 | 116 | 68.8 | 114 | 4 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 61.4 | 65.7 | 107 | 63.6 | 105 | 3 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 61.4 | 67.0 | 109 | 64.6 | 107 | 4 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 61.4 | 61.2 | 100 | 58.4 | 96 | 5 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 61.4 | 72.3 | 118 | 64.7 | 107 | 11 | 70-130/30 |
| 104-51-8 | n-Butylbeuzene | ND | | 61.4 | 73.5 | 120 | 73.5 | 121 | 0 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 61.4 | 68.6 | 112 | 66.6 | 110 | 3 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 61.4 | 66.3 | 108 | 64.1 | 106 | 3 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 61.4 | 75.3 | 123 | 71.3 | 118 | 5 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 61.4 | 64.0 | 104 | 60.6 | 100 | 5 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 61.4 | 66.5 | 108 | 63.3 | 104 | 5 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 61.4 | 65.9 | 107 | 61.3 | 101 | 7 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 61.4 | 71.7 | 117 | 75.6 | 125 | 5 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 61.4 | 72.1 | 117 | 67.2 | 111 | 7 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 61.4 | 67.3 | 110 | 65.7 | 108 | 2 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 61.4 | 63.6 | 104 | 60.3 | 100 | 5 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 61.4 | 69.5 | 113 | 66.5 | 110 | 4 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 61.4 | 83.1 | 135* [b] | 87.4 | 144* [b] | 5 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 61.4 | 66.6 | 108 | 63.9 | 105 | 4 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 61.4 | 73.0 | 119 | 70.1 | 116 | 4 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 61.4 | 65.8 | 107 | 64.4 | 106 | 2 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 61.4 | 69.4 | 113 | 66.8 | 110 | 4 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 61.4 | 70.8 | 115 | 68.1 | 112 | 4 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 61.4 | 81.3 | 132* [b] | 75.4 | 124 | 8 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 61.4 | 74.1 | 121 | 70.3 | 116 | 5 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 61.4 | 75.7 | 123 | 73.1 | 121 | 3 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 61.4 | 77.1 | 126 | 71.9 | 119 | 7 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 61.4 | 72.6 | 118 | 67.9 | 112 | 7 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 61.4 | 73.4 | 120 | 69.3 | 114 | 6 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 61.4 | 70.7 | 115 | 67.8 | 112 | 4 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 61.4 | 77.1 | 126 | 73.6 | 121 | 5 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4031-3MS | P55502.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |
| MC4031-3MSD | P55503.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |
| MC4031-3 | P55501.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-8

| CAS No. | Compound | MC4031-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 61.4 | 65.0 | 106 | 66.4 | 110 | 2 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 61.4 | 74.1 | 121 | 70.4 | 116 | 5 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 61.4 | 63.7 | 104 | 63.0 | 104 | 1 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 61.4 | 71.0 | 116 | 68.7 | 113 | 3 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 307 | 508 | 165* b | 491 | 162* b | 3 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 61.4 | 72.4 | 118 | 70.9 | 117 | 2 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 6.5 | | 61.4 | 69.6 | 103 | 65.7 | 98 | 6 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 61.4 | 64.9 | 106 | 65.7 | 108 | 1 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 61.4 | 86.5 | 141* b | 88.7 | 146* b | 3 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 61.4 | 73.5 | 120 | 70.3 | 116 | 4 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 61.4 | 70.7 | 115 | 68.9 | 114 | 3 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 61.4 | 76.4 | 124 | 74.1 | 122 | 3 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 61.4 | 87.0 | 142* b | 98.4 | 162* b | 12 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 61.4 | 73.5 | 120 | 69.5 | 115 | 6 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 61.4 | 71.1 | 116 | 66.7 | 110 | 6 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 61.4 | 54.9 | 89 | 58.0 | 96 | 5 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 61.4 | 69.5 | 113 | 66.2 | 109 | 5 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 61.4 | 69.3 | 113 | 65.6 | 108 | 5 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 61.4 | 62.6 | 102 | 58.9 | 97 | 6 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 61.4 | 82.2 | 134* b | 77.8 | 128 | 6 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 61.4 | 68.1 | 111 | 64.8 | 107 | 5 | 70-130/30 |
| 108-88-3 | Toluene | 6.5 | | 61.4 | 74.3 | 110 | 70.2 | 105 | 6 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 61.4 | 65.9 | 107 | 72.0 | 119 | 9 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 61.4 | 67.5 | 110 | 71.1 | 117 | 5 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 61.4 | 65.7 | 107 | 61.3 | 101 | 7 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 61.4 | 74.2 | 121 | 70.5 | 116 | 5 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 61.4 | 73.9 | 120 | 69.4 | 115 | 6 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 61.4 | 72.6 | 118 | 67.4 | 111 | 7 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 61.4 | 87.5 | 142* b | 83.8 | 138* b | 4 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 61.4 | 68.1 | 111 | 65.0 | 107 | 5 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 61.4 | 64.9 | 106 | 62.3 | 103 | 4 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 61.4 | 65.8 | 107 | 61.3 | 101 | 7 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 61.4 | 62.7 | 102 | 58.9 | 97 | 6 | 70-130/30 |
| | m,p-Xylene | 1.8 | J | 123 | 138 | 111 | 131 | 107 | 5 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 61.4 | 69.6 | 113 | 65.1 | 107 | 7 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 1.8 | J | 184 | 207 | 111 | 196 | 107 | 5 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4031-3MS | P55502.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |
| MC4031-3MSD | P55503.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |
| MC4031-3 | P55501.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-8

| CAS No. | Surrogate Recoveries | MS | MSD | MC4031-3 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | 91% | 99% | 70-130% |
| 2037-26-5 | Toluene-D8 | 102% | 101% | 116% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 89% | 88% | 113% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4026-2MS | N55826.D | 10 | 10/08/11 | DFT | n/a | n/a | MSN2094 |
| MC4026-2MSD | N55827.D | 10 | 10/08/11 | DFT | n/a | n/a | MSN2094 |
| MC4026-2 [a] | N55825.D | I0 | 10/08/11 | DFT | n/a | n/a | MSN2094 |

5.4.4

5

The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-11, MC3986-12

| CAS No. | Compound | MC4026-2 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 500 | 434 | 87 | 458 | 92 | 5 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 2500 | 5510 | 220* [b] | 5720 | 229* [b] | 4 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 500 | 2880 | 576* [b] | 3080 | 616* [b] | 7 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 500 | 506 | 101 | 512 | 102 | 1 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 500 | 505 | 101 | 509 | 102 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 500 | 512 | 102 | 485 | 97 | 5 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 500 | 546 | 109 | 552 | 110 | 1 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 500 | 464 | 93 | 476 | 95 | 3 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 500 | 456 | 91 | 498 | 100 | 9 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 500 | 519 | 104 | 549 | 110 | 6 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 500 | 526 | 105 | 551 | 110 | 5 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 500 | 530 | 106 | 545 | 109 | 3 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 500 | 522 | 104 | 537 | 107 | 3 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 500 | 505 | 101 | 515 | 103 | 2 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 500 | 566 | 113 | 579 | 116 | 2 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 500 | 504 | 101 | 507 | 101 | 1 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 500 | 514 | 103 | 509 | 102 | 1 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 500 | 526 | 105 | 527 | 105 | 0 | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 500 | 517 | 103 | 509 | 102 | 2 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 500 | 417 | 83 | 408 | 82 | 2 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 500 | 501 | 100 | 511 | 102 | 2 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 500 | 522 | 104 | 537 | 107 | 3 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 500 | 512 | 102 | 554 | 111 | 8 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 500 | 557 | 111 | 568 | 114 | 2 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 500 | 532 | 106 | 533 | 107 | 0 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 500 | 502 | 100 | 513 | 103 | 2 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 500 | 497 | 99 | 506 | 101 | 2 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 500 | 507 | 101 | 520 | 104 | 3 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 500 | 382 | 76 | 379 | 76 | 1 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 500 | 541 | 108 | 548 | 110 | 1 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 500 | 507 | 101 | 507 | 101 | 0 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 500 | 577 | 115 | 586 | 117 | 2 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 500 | 489 | 98 | 491 | 98 | 0 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 500 | 517 | 103 | 518 | 104 | 0 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 500 | 526 | 105 | 527 | 105 | 0 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 500 | 510 | 102 | 513 | 103 | 1 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4026-2MS | N55826.D | 10 | 10/08/11 | DFT | n/a | n/a | MSN2094 |
| MC4026-2MSD | N55827.D | 10 | 10/08/11 | DFT | n/a | n/a | MSN2094 |
| MC4026-2 [a] | N55825.D | 10 | 10/08/11 | DFT | n/a | n/a | MSN2094 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-11, MC3986-12

| CAS No. | Compound | MC4026-2 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 500 | 477 | 95 | 482 | 96 | 1 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 500 | 522 | 104 | 537 | 107 | 3 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 500 | 492 | 98 | 508 | 102 | 3 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 500 | 497 | 99 | 518 | 104 | 4 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 2500 | 2580 | 103 | 2770 | 111 | 7 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 500 | 444 | 89 | 463 | 93 | 4 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 500 | 516 | 103 | 521 | 104 | 1 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 500 | 501 | 100 | 528 | 106 | 5 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 500 | 537 | 107 | 571 | 114 | 6 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 500 | 600 | 120 | 615 | 123 | 2 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 500 | 544 | 109 | 558 | 112 | 3 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 500 | 516 | 103 | 539 | 108 | 4 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 500 | 555 | 111 | 592 | 118 | 6 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 500 | 527 | 105 | 533 | 107 | 1 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 500 | 516 | 103 | 517 | 103 | 0 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 500 | 472 | 94 | 525 | 105 | 11 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 500 | 525 | 105 | 545 | 109 | 4 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 500 | 529 | 106 | 535 | 107 | 1 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 500 | 528 | 106 | 523 | 105 | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 500 | 535 | 107 | 549 | 110 | 3 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 500 | 514 | 103 | 521 | 104 | 1 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 500 | 530 | 106 | 531 | 106 | 0 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 500 | 492 | 98 | 539 | 108 | 9 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 500 | 493 | 99 | 525 | 105 | 6 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 500 | 523 | 105 | 529 | 106 | 1 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 500 | 527 | 105 | 530 | 106 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 500 | 512 | 102 | 521 | 104 | 2 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 500 | 480 | 96 | 484 | 97 | 1 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 500 | 516 | 103 | 528 | 106 | 2 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 500 | 500 | 100 | 509 | 102 | 2 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 500 | 516 | 103 | 521 | 104 | 1 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 500 | 672 | 134* [b] | 697 | 139* [b] | 4 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 500 | 430 | 86 | 427 | 85 | 1 | 70-130/30 |
| | m,p-Xylene | 13.6 | | 1000 | 1050 | 104 | 1050 | 104 | 0 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 500 | 521 | 104 | 522 | 104 | 0 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 13.6 | | 1500 | 1570 | 104 | 1570 | 104 | 0 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4026-2MS | N55826.D | 10 | 10/08/11 | DFT | n/a | n/a | MSN2094 |
| MC4026-2MSD | N55827.D | 10 | 10/08/11 | DFT | n/a | n/a | MSN2094 |
| MC4026-2 [a] | N55825.D | 10 | 10/08/11 | DFT | n/a | n/a | MSN2094 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC3986-11, MC3986-12

| CAS No. | Surrogate Recoveries | MS | MSD | MC4026-2 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 95% | 95% | 94% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 98% | 96% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 94% | 94% | 97% | 70-130% |

(a) Elevated RL due to dilution required for matrix interference.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Volatile Internal Standard Area Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSK1846-CC1831 | Injection Date: | 10/06/11 |
| Lab File ID: | K55237.D | Injection Time: | 12:57 |
| Instrument ID: | GCMSK | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 281871 | 8.86 | 367423 | 9.71 | 177919 | 12.97 | 208534 | 15.53 | 81264 | 6.47 |
| Upper Limit [a] | 563742 | 9.36 | 734846 | 10.21 | 355838 | 13.47 | 417068 | 16.03 | 162528 | 6.97 |
| Lower Limit [b] | 140936 | 8.36 | 183712 | 9.21 | 88960 | 12.47 | 104267 | 15.03 | 40632 | 5.97 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSK1846-BS | 285556 | 8.86 | 367317 | 9.71 | 176130 | 12.97 | 210472 | 15.53 | 83164 | 6.47 |
| MSK1846-BSD | 286571 | 8.86 | 374543 | 9.71 | 178820 | 12.97 | 211042 | 15.53 | 82591 | 6.47 |
| MSK1846-MB | 288687 | 8.86 | 390074 | 9.71 | 176443 | 12.97 | 203117 | 15.53 | 84937 | 6.47 |
| MC4123-1 | 284828 | 8.86 | 383237 | 9.71 | 170725 | 12.97 | 198506 | 15.53 | 82463 | 6.47 |
| ZZZZZZ | 285003 | 8.86 | 385069 | 9.71 | 171708 | 12.97 | 197277 | 15.53 | 82919 | 6.47 |
| ZZZZZZ | 280436 | 8.86 | 376704 | 9.71 | 171182 | 12.97 | 195633 | 15.53 | 81084 | 6.47 |
| ZZZZZZ | 281996 | 8.86 | 378248 | 9.71 | 171789 | 12.97 | 200721 | 15.53 | 80450 | 6.47 |
| ZZZZZZ | 281336 | 8.86 | 376829 | 9.71 | 173235 | 12.97 | 197503 | 15.53 | 81217 | 6.47 |
| ZZZZZZ | 281524 | 8.86 | 378145 | 9.71 | 173367 | 12.97 | 195596 | 15.53 | 78492 | 6.47 |
| ZZZZZZ | 279996 | 8.86 | 378874 | 9.71 | 172232 | 12.97 | 195256 | 15.53 | 79230 | 6.48 |
| ZZZZZZ | 284089 | 8.86 | 379560 | 9.71 | 174170 | 12.97 | 202761 | 15.53 | 78915 | 6.49 |
| MC4123-1MS | 274091 | 8.86 | 359282 | 9.71 | 172014 | 12.97 | 204615 | 15.53 | 78770 | 6.47 |
| MC4123-1MSD | 280544 | 8.86 | 366064 | 9.71 | 177732 | 12.97 | 208301 | 15.53 | 80762 | 6.47 |
| MC3986-4 | 290915 | 8.86 | 387052 | 9.71 | 174363 | 12.97 | 192507 | 15.53 | 79794 | 6.48 |
| MC3986-5 | 288888 | 8.86 | 386519 | 9.71 | 171326 | 12.97 | 203243 | 15.53 | 77128 | 6.47 |
| MC3986-6 | 290625 | 8.86 | 384667 | 9.71 | 175620 | 12.97 | 193848 | 15.53 | 77594 | 6.48 |
| MC3986-7 | 291789 | 8.86 | 389107 | 9.71 | 173013 | 12.97 | 208150 | 15.53 | 76134 | 6.47 |
| MC3986-10 | 297138 | 8.86 | 398193 | 9.71 | 178944 | 12.97 | 216297 | 15.53 | 77968 | 6.47 |
| ZZZZZZ | 298137 | 8.86 | 399349 | 9.71 | 180462 | 12.97 | 212118 | 15.53 | 77245 | 6.47 |
| ZZZZZZ | 300523 | 8.86 | 400248 | 9.71 | 181415 | 12.97 | 214054 | 15.53 | 74187 | 6.47 |
| ZZZZZZ | 301835 | 8.86 | 404729 | 9.71 | 182634 | 12.97 | 214604 | 15.53 | 76731 | 6.47 |
| ZZZZZZ | 300480 | 8.86 | 400362 | 9.71 | 179303 | 12.97 | 209464 | 15.53 | 79852 | 6.47 |
| ZZZZZZ | 295469 | 8.86 | 394384 | 9.71 | 179249 | 12.97 | 207461 | 15.53 | 71918 | 6.47 |
| ZZZZZZ | 286685 | 8.86 | 382236 | 9.71 | 159802 | 12.97 | 204678 | 15.53 | 66937 | 6.47 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSN2094-CC2093 | Injection Date: | 10/08/11 |
| Lab File ID: | N55817.D | Injection Time: | 10:01 |
| Instrument ID: | GCMSN | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 498396 | 9.03 | 758061 | 9.91 | 352627 | 13.16 | 355165 | 15.72 | 219341 | 6.58 |
| Upper Limit [a] | 996792 | 9.53 | 1516122 | 10.41 | 705254 | 13.66 | 710330 | 16.22 | 438682 | 7.08 |
| Lower Limit [b] | 249198 | 8.53 | 379031 | 9.41 | 176314 | 12.66 | 177583 | 15.22 | 109671 | 6.08 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSN2094-BS | 489108 | 9.03 | 741202 | 9.91 | 345412 | 13.16 | 347179 | 15.72 | 228264 | 6.58 |
| MSN2094-BSD | 494471 | 9.03 | 747939 | 9.91 | 338058 | 13.16 | 346455 | 15.72 | 192580 | 6.57 |
| MSN2094-MB | 488217 | 9.03 | 744955 | 9.91 | 330344 | 13.16 | 326796 | 15.72 | 238475 | 6.58 |
| ZZZZZZ | 483843 | 9.03 | 735425 | 9.91 | 329246 | 13.16 | 326489 | 15.72 | 181634 | 6.58 |
| ZZZZZZ | 482320 | 9.03 | 730830 | 9.91 | 323891 | 13.16 | 312939 | 15.72 | 172741 | 6.58 |
| ZZZZZZ | 470008 | 9.03 | 714230 | 9.91 | 322876 | 13.16 | 327494 | 15.72 | 188954 | 6.58 |
| MC4026-2 | 472217 | 9.03 | 721968 | 9.91 | 327011 | 13.16 | 320917 | 15.72 | 198213 | 6.58 |
| MC4026-2MS | 468189 | 9.03 | 721085 | 9.91 | 329789 | 13.16 | 337466 | 15.72 | 178438 | 6.58 |
| MC4026-2MSD | 478643 | 9.03 | 730910 | 9.91 | 336266 | 13.16 | 341190 | 15.72 | 205802 | 6.58 |
| ZZZZZZ | 477862 | 9.03 | 731937 | 9.91 | 325201 | 13.16 | 317399 | 15.72 | 231980 | 6.58 |
| ZZZZZZ | 473856 | 9.03 | 719559 | 9.91 | 320120 | 13.17 | 309046 | 15.72 | 168790 | 6.58 |
| ZZZZZZ | 464381 | 9.03 | 716112 | 9.91 | 317692 | 13.16 | 310497 | 15.72 | 172868 | 6.58 |
| MC3986-11 | 467923 | 9.03 | 719118 | 9.91 | 321294 | 13.16 | 312471 | 15.72 | 182623 | 6.58 |
| MC3986-12 | 466528 | 9.03 | 716244 | 9.91 | 320352 | 13.16 | 314476 | 15.72 | 203208 | 6.58 |
| ZZZZZZ | 461811 | 9.03 | 707365 | 9.91 | 319127 | 13.16 | 308211 | 15.72 | 134331 | 6.58 |
| ZZZZZZ | 463608 | 9.03 | 705972 | 9.91 | 316691 | 13.16 | 307891 | 15.72 | 171540 | 6.58 |
| ZZZZZZ | 454041 | 9.03 | 705686 | 9.91 | 317770 | 13.16 | 303103 | 15.72 | 172588 | 6.58 |
| ZZZZZZ | 457769 | 9.03 | 710250 | 9.91 | 320608 | 13.16 | 306072 | 15.72 | 165351 | 6.58 |
| ZZZZZZ | 453088 | 9.03 | 705230 | 9.91 | 318878 | 13.16 | 305938 | 15.72 | 166120 | 6.58 |
| ZZZZZZ | 458270 | 9.03 | 703532 | 9.91 | 313123 | 13.16 | 305177 | 15.72 | 177315 | 6.58 |
| ZZZZZZ | 451530 | 9.03 | 695467 | 9.91 | 308750 | 13.16 | 297892 | 15.72 | 168066 | 6.58 |
| ZZZZZZ | 449342 | 9.03 | 693724 | 9.91 | 313984 | 13.16 | 302900 | 15.72 | 171658 | 6.58 |
| ZZZZZZ | 443924 | 9.03 | 693191 | 9.91 | 311542 | 13.16 | 307051 | 15.72 | 192319 | 6.58 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSP1816-CC1815 | Injection Date: | 10/06/11 |
| Lab File ID: | P55471.D | Injection Time: | 09:58 |
| Instrument ID: | GCMSP | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 83163 | 8.50 | I38001 | 9.35 | 74719 | 12.57 | 54357 | 15.13 | 29790 | 6.26 |
| Upper Limit [a] | I66326 | 9.00 | 276002 | 9.85 | 149438 | 13.07 | 108714 | 15.63 | 59580 | 6.76 |
| Lower Limit [b] | 41582 | 8.00 | 69001 | 8.85 | 37360 | 12.07 | 27179 | 14.63 | 14895 | 5.76 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSP1816-BS | 83854 | 8.50 | 140081 | 9.35 | 75068 | 12.57 | 54140 | 15.13 | 30900 | 6.26 |
| MSP1816-MB | 69783 | 8.51 | 114190 | 9.36 | 57324 | 12.58 | 34582 | 15.14 | 24I02 | 6.31 |
| MC3921-2 | 53944 | 8.51 | 90066 | 9.36 | 45294 | 12.58 | 28489 | 15.14 | 27620 | 6.39 |
| MC3921-2MS | 78832 | 8.50 | 133947 | 9.35 | 72083 | I2.57 | 52976 | 15.13 | 43232 | 6.28 |
| MC3921-2MSD | 74780 | 8.50 | 126335 | 9.35 | 67726 | 12.57 | 49416 | 15.13 | 49242 | 6.26 |
| ZZZZZZ | 62020 | 8.51 | 104610 | 9.36 | 52375 | 12.58 | 33622 | 15.13 | 40087 | 6.32 |
| MC3986-1 | 54959 | 8.50 | 9II83 | 9.36 | 47937 | 12.58 | 32837 | 15.13 | 31178 | 6.31 |
| MC3986-2 | 65980 | 8.5I | 111733 | 9.36 | 57230 | 12.58 | 37080 | 15.14 | 43647 | 6.34 |
| MC3986-3 | 55569 | 8.50 | 93030 | 9.36 | 47654 | 12.58 | 32267 | 15.13 | 32324 | 6.29 |
| MC3986-9 | 77439 | 8.50 | 125935 | 9.36 | 65483 | 12.57 | 49375 | 15.13 | 45444 | 6.29 |
| ZZZZZZ | 72789 | 8.50 | 118453 | 9.36 | 58471 | 12.58 | 43146 | 15.13 | 43509 | 6.29 |
| ZZZZZZ | 67303 | 8.49 | 110264 | 9.35 | 56007 | 12.57 | 40037 | 15.13 | 42083 | 6.18 |
| ZZZZZZ | 88575 | 8.50 | 14358I | 9.35 | 75004 | 12.57 | 53494 | 15.13 | 42716 | 6.31 |
| ZZZZZZ | 80501 | 8.50 | 131067 | 9.36 | 65595 | 12.58 | 49175 | 15.13 | 44781 | 6.30 |
| ZZZZZZ | 74489 | 8.50 | 121457 | 9.36 | 61511 | 12.58 | 4104I | 15.13 | 41168 | 6.28 |
| ZZZZZZ | 69984 | 8.50 | 115826 | 9.36 | 59202 | 12.58 | 40969 | 15.13 | 41101 | 6.29 |
| ZZZZZZ | 68754 | 8.50 | 113794 | 9.36 | 57474 | 12.58 | 37448 | 15.13 | 36550 | 6.31 |
| ZZZZZZ | 67922 | 8.50 | I13247 | 9.36 | 58349 | 12.58 | 38037 | 15.13 | 40061 | 6.31 |
| ZZZZZZ | 65660 | 8.50 | 108890 | 9.36 | 56199 | 12.58 | 35844 | 15.13 | 35906 | 6.29 |
| ZZZZZZ | 66387 | 8.50 | I09965 | 9.36 | 56738 | 12.58 | 35724 | 15.14 | 36470 | 6.32 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSP1817-CC1815 | Injection Date: | 10/07/11 |
| Lab File ID: | P55497.D | Injection Time: | 10:06 |
| Instrument ID: | GCMSP | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 82447 | 8.50 | 139556 | 9.35 | 77228 | 12.57 | 58528 | 15.13 | 33098 | 6.25 |
| Upper Limit [a] | 164894 | 9.00 | 279112 | 9.85 | 154456 | 13.07 | 117056 | 15.63 | 66196 | 6.75 |
| Lower Limit [b] | 41224 | 8.00 | 69778 | 8.85 | 38614 | 12.07 | 29264 | 14.63 | 16549 | 5.75 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSP1817-BS | 77797 | 8.50 | 128020 | 9.35 | 71061 | 12.57 | 53009 | 15.13 | 25091 | 6.22 |
| MSP1817-MB | 70073 | 8.50 | 116276 | 9.36 | 59916 | 12.58 | 38084 | 15.13 | 24441 | 6.29 |
| MC4031-3 | 65376 | 8.50 | 110054 | 9.36 | 56126 | 12.58 | 37587 | 15.13 | 39500 | 6.31 |
| MC4031-3MS | 75178 | 8.50 | 130618 | 9.35 | 73374 | 12.57 | 56272 | 15.13 | 44014 | 6.23 |
| MC4031-3MSD | 84452 | 8.50 | 142346 | 9.35 | 80045 | 12.57 | 61142 | 15.13 | 50339 | 6.23 |
| ZZZZZZ | 49960 | 8.51 | 84812 | 9.36 | 43096 | 12.58 | 29064[c] | 15.13 | 28067 | 6.37 |
| MC3986-1 [d] | 51032 | 8.50 | 86362 | 9.36 | 44506 | 12.58 | 29496 | 15.13 | 31509 | 6.29 |
| MC3986-3 [d] | 54280 | 8.50 | 89914 | 9.36 | 46663 | 12.58 | 30211 | 15.13 | 29771 | 6.36 |
| MC3986-8 | 61642 | 8.50 | 106035 | 9.36 | 57477 | 12.57 | 41557 | 15.13 | 38107 | 6.25 |
| ZZZZZZ | 61321 | 8.50 | 100631 | 9.36 | 52005 | 12.57 | 35573 | 15.13 | 35821 | 6.27 |
| ZZZZZZ | 71070 | 8.50 | 113286 | 9.36 | 59441 | 12.58 | 40405 | 15.13 | 34406 | 6.31 |
| ZZZZZZ | 68541 | 8.50 | 112965 | 9.36 | 65377 | 12.57 | 50602 | 15.13 | 39553 | 6.28 |
| ZZZZZZ | 74367 | 8.51 | 120228 | 9.36 | 59710 | 12.58 | 40103 | 15.13 | 21834 | 6.37 |
| ZZZZZZ | 69877 | 8.51 | 112686 | 9.36 | 57746 | 12.58 | 38709 | 15.13 | 19576 | 6.38 |
| ZZZZZZ | 66226 | 8.50 | 111355 | 9.36 | 56701 | 12.58 | 37169 | 15.13 | 20557 | 6.34 |
| ZZZZZZ | 63040 | 8.50 | 104803 | 9.36 | 53553 | 12.58 | 33818 | 15.13 | 20850 | 6.33 |
| ZZZZZZ | 45711 | 8.50 | 76818 | 9.36 | 40107 | 12.58 | 24946[c] | 15.14 | 16473[c] | 6.29 |
| ZZZZZZ | 59794 | 8.50 | 101203 | 9.36 | 53711 | 12.58 | 33978 | 15.13 | 32414 | 6.30 |
| ZZZZZZ | 59522 | 8.50 | 101242 | 9.35 | 52251 | 12.58 | 30049 | 15.13 | 29182 | 6.33 |
| ZZZZZZ | 55291 | 8.50 | 96760 | 9.36 | 50229 | 12.57 | 31591 | 15.13 | 31702 | 6.26 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.
(d) Confirmation run for surrogate recoveries.

# Volatile Surrogate Recovery Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3986-11 | N55831.D | 95.0 | 96.0 | 97.0 |
| MC3986-12 | N55832.D | 95.0 | 96.0 | 97.0 |
| MC4026-2MS | N55826.D | 95.0 | 97.0 | 94.0 |
| MC4026-2MSD | N55827.D | 95.0 | 98.0 | 94.0 |
| MSN2094-BS | N55818.D | 93.0 | 97.0 | 93.0 |
| MSN2094-BSD | N55819.D | 93.0 | 97.0 | 94.0 |
| MSN2094-MB | N55821.D | 92.0 | 95.0 | 97.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

5.6.1

5

# Volatile Surrogate Recovery Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC3986-1 | P55506.D | 118.0 | 139.0* [a] | 138.0* [a] |
| MC3986-1 | P55481.D | 117.0 | 144.0* [a] | 138.0* [a] |
| MC3986-2 | P55482.D | 93.0 | 106.0 | 108.0 |
| MC3986-3 | P55507.D | 121.0 | 144.0* [a] | 148.0* [a] |
| MC3986-3 | P55483.D | 116.0 | 135.0* [a] | 135.0* [a] |
| MC3986-4 | K55252.D | 109.0 | 106.0 | 116.0 |
| MC3986-5 | K55253.D | 110.0 | 108.0 | 112.0 |
| MC3986-6 | K55254.D | 110.0 | 108.0 | 114.0 |
| MC3986-7 | K55255.D | 107.0 | 107.0 | 112.0 |
| MC3986-8 | P55508.D | 96.0 | 113.0 | 105.0 |
| MC3986-9 | P55485.D | 86.0 | 109.0 | 102.0 |
| MC3986-10 | K55256.D | 96.0 | 106.0 | 109.0 |
| MC3921-2MS | P55477.D | 93.0 | 102.0 | 94.0 |
| MC3921-2MSD | P55478.D | 95.0 | 110.0 | 99.0 |
| MC4031-3MS | P55502.D | 94.0 | 102.0 | 89.0 |
| MC4031-3MSD | P55503.D | 91.0 | 101.0 | 88.0 |
| MC4123-1MS | K55250.D | 102.0 | 108.0 | 104.0 |
| MC4123-1MSD | K55251.D | 99.0 | 105.0 | 103.0 |
| MSK1846-BS | K55238.D | 103.0 | 110.0 | 104.0 |
| MSK1846-BSD | K55239.D | 100.0 | 105.0 | 103.0 |
| MSK1846-MB | K55241.D | 109.0 | 106.0 | 110.0 |
| MSP1816-BS | P55472.D | 90.0 | 104.0 | 95.0 |
| MSP1816-MB | P55474.D | 83.0 | 104.0 | 111.0 |
| MSP1817-BS | P55498.D | 95.0 | 113.0 | 98.0 |
| MSP1817-MB | P55500.D | 81.0 | 100.0 | 101.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

(a) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

New England ACCUTEST LABORATORIES

# GC Volatiles

6

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1341-MB | BH24389.D | 1 | 10/06/11 | WS | n/a | n/a | GBH1341 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3986-1, MC3986-2, MC3986-3, MC3986-4, MC3986-5, MC3986-6, MC3986-7, MC3986-9, MC3986-10

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 0.95 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 86% | 36-148% |

# Method Blank Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1342-MB | BH24421.D | 1 | 10/08/11 | AF | n/a | n/a | GBH1342 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3986-8

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 0.95 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 90% | 36-148% |

# Blank Spike Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1341-BSP | BH24390.D | 1 | 10/06/11 | WS | n/a | n/a | GBH1341 |



The QC reported here applies to the following samples: Method: SW846 8015

MC3986-1, MC3986-2, MC3986-3, MC3986-4, MC3986-5, MC3986-6, MC3986-7, MC3986-9, MC3986-10

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 21.5 | 108 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 86% | 36-148% |

# Blank Spike Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1342-BSP | BH24422.D | 1 | 10/08/11 | AF | n/a | n/a | GBH1342 |

The QC reported here applies to the following samples: Method: SW846 8015

MC3986-8

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 19.8 | 99 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 89% | 36-148% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4194-1MS | BH24398.D | 1 | 10/06/11 | WS | n/a | n/a | GBH1341 |
| MC4194-1MSD | BH24399.D | 1 | 10/06/11 | WS | n/a | n/a | GBH1341 |
| MC4194-1 | BH24397.D | 1 | 10/06/11 | WS | n/a | n/a | GBH1341 |



The QC reported here applies to the following samples: Method: SW846 8015

MC3986-1, MC3986-2, MC3986-3, MC3986-4, MC3986-5, MC3986-6, MC3986-7, MC3986-9, MC3986-10

| CAS No. | Compound | MC4194-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 8.9 | U | 35.7 | 34.0 | 95 | 32.8 | 92 | 4 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4194-1 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 86% | 88% | 86% | 36-148% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4148-1MS | BH24424.D | 1 | 10/08/11 | AF | n/a | n/a | GBH1342 |
| MC4148-1MSD | BH24425.D | 1 | 10/08/11 | AF | n/a | n/a | GBH1342 |
| MC4148-1 | BH24423.D | 1 | 10/08/11 | AF | n/a | n/a | GBH1342 |

The QC reported here applies to the following samples: Mcthod: SW846 8015

MC3986-8

| CAS No. | Compound | MC4148-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 22.4 | | 24.2 | 45.7 | 96 | 45.5 | 95 | 0 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4148-1 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 90% | 99% | 94% | 36-148% |

# Volatile Surrogate Recovery Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3986-1 | BH24416.D | 83.0 |
| MC3986-2 | BH24415.D | 84.0 |
| MC3986-3 | BH24414.D | 88.0 |
| MC3986-4 | BH24407.D | 94.0 |
| MC3986-5 | BH24408.D | 96.0 |
| MC3986-6 | BH24409.D | 81.0 |
| MC3986-7 | BH24410.D | 98.0 |
| MC3986-8 | BH24430.D | 100.0 |
| MC3986-9 | BH24412.D | 88.0 |
| MC3986-10 | BH24413.D | 95.0 |
| GBH1341-BSP | BH24390.D | 86.0 |
| GBH1341-MB | BH24389.D | 86.0 |
| GBH1342-BSP | BH24422.D | 89.0 |
| GBH1342-MB | BH24421.D | 90.0 |
| MC4148-1MS | BH24424.D | 90.0 |
| MC4148-1MSD | BH24425.D | 99.0 |
| MC4194-1MS | BH24398.D | 86.0 |
| MC4194-1MSD | BH24399.D | 88.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1341-CC1043 | Injection Date: | 10/06/11 |
| Lab File ID: | BH24388.D | Injection Time: | 10:50 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1341-MB | BH24389.D | 10/06/11 | 11:29 | 32.39 |
| GBH1340-MB | BH24389A.D | 10/06/11 | 11:29 | 32.39 |
| GBH1341-BSP | BH24390.D | 10/06/11 | 12:09 | 32.39 |
| GBH1340-BSP | BH24390A.D | 10/06/11 | 12:09 | 32.39 |
| MC4320-4 | BH24391.D | 10/06/11 | 12:49 | 32.39 |
| MC4320-4MS | BH24392.D | 10/06/11 | 13:29 | 32.39 |
| MC4320-4MSD | BH24393.D | 10/06/11 | 14:08 | 32.39 |
| ZZZZZZ | BH24394.D | 10/06/11 | 14:48 | 32.39 |
| ZZZZZZ | BH24395.D | 10/06/11 | 15:28 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1340-CC1043 | Injection Date: | 10/06/11 |
| Lab File ID: | BH24388A.D | Injection Time: | 10:50 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1341-MB | BH24389.D | 10/06/11 | 11:29 | 32.39 |
| GBH1340-MB | BH24389A.D | 10/06/11 | 11:29 | 32.39 |
| GBH1341-BSP | BH24390.D | 10/06/11 | 12:09 | 32.39 |
| GBH1340-BSP | BH24390A.D | 10/06/11 | 12:09 | 32.39 |
| MC4320-4 | BH24391.D | 10/06/11 | 12:49 | 32.39 |
| MC4320-4MS | BH24392.D | 10/06/11 | 13:29 | 32.39 |
| MC4320-4MSD | BH24393.D | 10/06/11 | 14:08 | 32.39 |
| ZZZZZZ | BH24394.D | 10/06/11 | 14:48 | 32.39 |
| ZZZZZZ | BH24395.D | 10/06/11 | 15:28 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1341-CC1043 | Injection Date: | 10/06/11 |
| Lab File ID: | BH24396.D | Injection Time: | 16:08 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC4194-1 | BH24397.D | 10/06/11 | 16:48 | 32.40 |
| MC4194-1MS | BH24398.D | 10/06/11 | 17:28 | 32.39 |
| MC4194-1MSD | BH24399.D | 10/06/11 | 18:07 | 32.39 |
| ZZZZZZ | BH24400.D | 10/06/11 | 18:47 | 32.39 |
| ZZZZZZ | BH24401.D | 10/06/11 | 19:26 | 32.39 |
| ZZZZZZ | BH24402.D | 10/06/11 | 20:06 | 32.39 |
| ZZZZZZ | BH24403.D | 10/06/11 | 20:45 | 32.39 |
| ZZZZZZ | BH24404.D | 10/06/11 | 21:24 | 32.39 |
| ZZZZZZ | BH24405.D | 10/06/11 | 22:03 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1340-CC1043 | Injection Date: | 10/06/11 |
| Lab File ID: | BH24396A.D | Injection Time: | 16:08 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC4I94-1 | BH24397.D | 10/06/11 | 16:48 | 32.40 |
| MC4194-1MS | BH24398.D | 10/06/11 | I7:28 | 32.39 |
| MC4194-1MSD | BH24399.D | 10/06/11 | 18:07 | 32.39 |
| ZZZZZZ | BH24400.D | 10/06/11 | 18:47 | 32.39 |
| ZZZZZZ | BH24401.D | 10/06/11 | 19:26 | 32.39 |
| ZZZZZZ | BH24402.D | 10/06/11 | 20:06 | 32.39 |
| ZZZZZZ | BH24403.D | 10/06/11 | 20:45 | 32.39 |
| ZZZZZZ | BH24404.D | 10/06/11 | 21:24 | 32.39 |
| ZZZZZZ | BH24405.D | 10/06/11 | 22:03 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1341-CC1043 | Injection Date: | 10/06/11 |
| Lab File ID: | BH24406.D | Injection Time: | 22:43 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3986-4 | BH24407.D | 10/06/11 | 23:22 | 32.39 |
| MC3986-5 | BH24408.D | 10/07/11 | 00:01 | 32.39 |
| MC3986-6 | BH24409.D | 10/07/11 | 00:41 | 32.39 |
| MC3986-7 | BH24410.D | 10/07/11 | 01:20 | 32.39 |
| MC3986-9 | BH24412.D | 10/07/11 | 02:39 | 32.39 |
| MC3986-10 | BH24413.D | 10/07/11 | 03:18 | 32.39 |
| MC3986-3 | BH24414.D | 10/07/11 | 03:57 | 32.39 |
| MC3986-2 | BH24415.D | 10/07/11 | 04:37 | 32.39 |
| MC3986-1 | BH24416.D | 10/07/11 | 05:16 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1342-CC1043 | Injection Date: | 10/08/11 |
| Lab File ID: | BH24420.D | Injection Time: | 13:31 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1342-MB | BH24421.D | 10/08/11 | 14:28 | 32.40 |
| GBH1343-MB | BH24421A.D | 10/08/11 | 14:28 | 32.40 |
| GBH1342-BSP | BH24422.D | 10/08/11 | 15:08 | 32.40 |
| GBH1343-BSP | BH24422A.D | 10/08/11 | 15:08 | 32.40 |
| MC4148-1 | BH24423.D | 10/08/11 | 15:52 | 32.40 |
| MC4148-1MS | BH24424.D | 10/08/11 | 16:32 | 32.40 |
| MC4148-1MSD | BH24425.D | 10/08/11 | 17:13 | 32.39 |
| ZZZZZZ | BH24426.D | 10/08/11 | 17:53 | 32.39 |
| ZZZZZZ | BH24427.D | 10/08/11 | 18:34 | 32.39 |
| ZZZZZZ | BH24428.D | 10/08/11 | 19:14 | 32.39 |
| MC3986-8 | BH24430.D | 10/08/11 | 20:34 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1343-CC1043 | Injection Date: | 10/08/11 |
| Lab File ID: | BH24420A.D | Injection Time: | 13:31 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1342-MB | BH24421.D | 10/08/11 | 14:28 | 32.40 |
| GBH1343-MB | BH24421A.D | 10/08/11 | 14:28 | 32.40 |
| GBH1342-BSP | BH24422.D | 10/08/11 | 15:08 | 32.40 |
| GBH1343-BSP | BH24422A.D | 10/08/11 | 15:08 | 32.40 |
| MC4148-1 | BH24423.D | 10/08/11 | 15:52 | 32.40 |
| MC4148-1MS | BH24424.D | 10/08/11 | 16:32 | 32.40 |
| MC4148-1MSD | BH24425.D | 10/08/11 | 17:13 | 32.39 |
| ZZZZZZ | BH24426.D | 10/08/11 | 17:53 | 32.39 |
| ZZZZZZ | BH24427.D | 10/08/11 | 18:34 | 32.39 |
| ZZZZZZ | BH24428.D | 10/08/11 | 19:14 | 32.39 |
| MC3986-8 | BH24430.D | 10/08/11 | 20:34 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

New England ACCUTEST LABORATORIES

## GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26532-MB | BG31613.D | 1 | 10/10/11 | KD | 10/08/11 | OP26532 | GBG1135 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3986-1, MC3986-2, MC3986-3, MC3986-4, MC3986-5, MC3986-6, MC3986-7, MC3986-8, MC3986-9, MC3986-10



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 16 | 12 | mg/kg | |
| | TPH (>C28-C40) | ND | 16 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 84-15-1 | o-Terphenyl | 47% | 40-140% |

# Blank Spike Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26532-BS | BG31615.D | 1 | 10/10/11 | KD | 10/08/11 | OP26532 | GBG1135 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3986-1, MC3986-2, MC3986-3, MC3986-4, MC3986-5, MC3986-6, MC3986-7, MC3986-8, MC3986-9, MC3986-10

7.2.1

7

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 162 | 176 | 109 | 63-139 |
| | TPH (>C28-C40) | 162 | 128 | 79 | 46-103 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 84-15-1 | o-Terphenyl | 96% | 40-140% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26532-MS | BG31621.D | 1 | 10/10/11 | KD | 10/08/11 | OP26532 | GBG1135 |
| OP26532-MSD | BG31623.D | 1 | 10/10/11 | KD | 10/08/11 | OP26532 | GBG1135 |
| MC4031-3 | BG31625.D | 1 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1135 |

The QC reported here applies to the following samples: Method: SW846-8015

MC3986-1, MC3986-2, MC3986-3, MC3986-4, MC3986-5, MC3986-6, MC3986-7, MC3986-8, MC3986-9, MC3986-10

7.3.1

7

| CAS No. | Compound | MC4031-3 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 179 | 125 | 70 | 96.6 | 54 | 26 | 8-154/127 |
| | TPH (>C28-C40) | ND | | 179 | 96.5 | 54 | 80.0 | 45 | 19 | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4031-3 | Limits |
|---|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 64% | 46% | 88% | 40-140% |

# Semivolatile Surrogate Recovery Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Method: SW846-8015 | Matrix: SO |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC3986-1 | BG31622.D | 68.0 |
| MC3986-2 | BG31617.D | 76.0 |
| MC3986-3 | BG31635.D | 54.0 |
| MC3986-4 | BG31652.D | 56.0 |
| MC3986-4 | BG31643.D | 48.0 |
| MC3986-5 | BG31626.D | 26.0* [b] |
| MC3986-5 | BG31651.D | 85.0 |
| MC3986-6 | BG31647.D | 70.0 |
| MC3986-6 | BG31637.D | 68.0 |
| MC3986-7 | BG31650.D | 80.0 |
| MC3986-7 | BG31624.D | 78.0 |
| MC3986-8 | BG31612.D | 76.0 |
| MC3986-9 | BG31653.D | 40.0 |
| MC3986-10 | BG31618.D | 70.0 |
| OP26532-BS | BG31615.D | 96.0 |
| OP26532-MB | BG31613.D | 47.0 |
| OP26532-MS | BG31621.D | 64.0 |
| OP26532-MSD | BG31623.D | 46.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = o-Terphenyl | 40-140% |

(a) Recovery from GC signal #1
(b) Outside control limits due to possible matrix interference.

7.4.1

7

# GC Surrogate Retention Time Summary



Job Number: MC3986
Aecount: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1136-ICC1136 | Injection Date: | 10/10/11 |
| Lab File ID: | BG31606.D | Injection Time: | 16:47 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 15.85 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26532-BS | BG31615.D | 10/10/I1 | 20:10 | 15.23 |
| MC3986-2 | BG31617.D | 10/I0/11 | 21:02 | 15.22 |
| OP26532-MS | BG31621.D | 10/10/11 | 22:44 | 15.22 |
| OP26532-MSD | BG31623.D | 10/10/11 | 23:35 | 15.22 |
| MC4031-3 | BG31625.D | 10/11/11 | 00:30 | 15.23 |
| ZZZZZZ | BG31627.D | 10/11/11 | 01:25 | 15.22 |
| ZZZZZZ | BG31629.D | 10/11/11 | 02:21 | 15.23 |

Surrogate Compounds

S1 = o-Terphenyl

(a) Retention time from GC signal #1

7.5.1

7

# GC Surrogate Retention Time Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1135-ICC1135 | Injection Date: | 10/10/11 |
| Lab File ID: | BG31607.D | Injection Time: | 16:47 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 15.23 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3986-8 | BG31612.D | 10/10/11 | 19:19 | 15.84 |
| OP26532-MB | BG31613.D | 10/10/11 | 19:19 | 15.23 |
| ZZZZZZ | BG31614.D | 10/10/11 | 20:10 | 15.84 |
| ZZZZZZ | BG31616.D | 10/10/11 | 21:02 | 15.84 |
| MC3986-10 | BG31618.D | 10/10/11 | 21:52 | 15.84 |
| ZZZZZZ | BG31620.D | 10/10/11 | 22:44 | 15.84 |
| MC3986-1 | BG31622.D | 10/10/11 | 23:35 | 15.84 |
| MC3986-7 | BG31624.D | 10/11/11 | 00:30 | 15.88 |
| MC3986-5 | BG31626.D | 10/11/11 | 01:25 | 15.84 |

Surrogate Compounds

S1 = o-Terphenyl

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1135-CC1135 | Injection Date: | 10/11/11 |
| Lab File ID: | BG31633.D | Injection Time: | 04:12 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 15.23 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC3986-3 | BG31635.D | 10/11/11 | 05:10 | 15.22 |
| GBG1136-ECC113 | BG31634.D | I0/11/11 | 05:10 | 15.84 |

Surrogate Compounds

S1 = o-Terphenyl

(a) Retention time from GC signal #1

7.5.3

7

New England ACCUTEST LABORATORIES

General Chemistry

# QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC3986-1 Analyzed: 29-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP46 (30-31.5)092611

| | | |
|---|---|---|
| Wet Weight (Total) | 24.606 | g |
| Tare Weight | 18.515 | g |
| Dry Weight (Total) | 23.662 | g |
| Solids, Percent | 84.5 | % |

Sample: MC3986-2 Analyzed: 29-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP46 (20-22.5)092611

| | | |
|---|---|---|
| Wet Weight (Total) | 23.436 | g |
| Tare Weight | 15.606 | g |
| Dry Weight (Total) | 23.262 | g |
| Solids, Percent | 97.8 | % |

Sample: MC3986-3 Analyzed: 29-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP46 (10-12.5)092611

| | | |
|---|---|---|
| Wet Weight (Total) | 25.734 | g |
| Tare Weight | 17.123 | g |
| Dry Weight (Total) | 24.271 | g |
| Solids, Percent | 83 | % |

Sample: MC3986-4 Analyzed: 29-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP37 (20-22.5)092611

| | | |
|---|---|---|
| Wet Weight (Total) | 24.107 | g |
| Tare Weight | 18.752 | g |
| Dry Weight (Total) | 23.337 | g |
| Solids, Percent | 85.6 | % |

Sample: MC3986-5 Analyzed: 29-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP40 (10-12.5)092611

| | | |
|---|---|---|
| Wet Weight (Total) | 37.068 | g |
| Tare Weight | 28.804 | g |
| Dry Weight (Total) | 36.552 | g |
| Solids, Percent | 93.8 | % |

Sample: MC3986-6 Analyzed: 29-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP37 (10-12.5)092611

| | | |
|---|---|---|
| Wet Weight (Total) | 27.382 | g |
| Tare Weight | 20.987 | g |
| Dry Weight (Total) | 26.483 | g |
| Solids, Percent | 85.9 | % |

8.1

8

# Percent Solids Raw Data Summary



Job Number: MC3986
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC3986-7 Analyzed: 29-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP40 (10-12.5)092611 DUP

| | | |
|---|---|---|
| Wet Weight (Total) | 29.662 | g |
| Tare Weight | 21.635 | g |
| Dry Weight (Total) | 29.302 | g |
| Solids, Percent | 95.5 | % |

Sample: MC3986-8 Analyzed: 29-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP40 (20-22.5)092611

| | | |
|---|---|---|
| Wet Weight (Total) | 25.218 | g |
| Tare Weight | 18.62 | g |
| Dry Weight (Total) | 24.899 | g |
| Solids, Percent | 95.2 | % |

Sample: MC3986-9 Analyzed: 29-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP40 (30-31.5)092611

| | | |
|---|---|---|
| Wet Weight (Total) | 36.106 | g |
| Tare Weight | 26.518 | g |
| Dry Weight (Total) | 35.844 | g |
| Solids, Percent | 97.3 | % |

Sample: MC3986-10 Analyzed: 29-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP37 (30-31.5)092611

| | | |
|---|---|---|
| Wet Weight (Total) | 29.365 | g |
| Tare Weight | 19.665 | g |
| Dry Weight (Total) | 28.914 | g |
| Solids, Percent | 95.4 | % |

# SVE Install 2011 Data Review

**Laboratory SDG: MC4031**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 1/20/2012**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| VMP-34 (10-12.5) 092711 | VMP-34 (20-22.5) 092711 |
| VMP-34 (30-31.5) 092711 | VMP-46 (30-31.5) 092711 EB |
| VMP-35 (10-12.5) 092711 | VMP-35 (20-22.5) 092711 |
| VMP-35 (30-31.5) 092711 | VMP-36 (10-12.5) 092711 |
| VMP-36 (10-12.5) 092711 DUP | VMP-36 (20-22.5) 092711 |
| VMP-36 (30-31.5) 092711 | TB092711-1 |
| TB092711-2 | |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS/LCSD recoveries were outside evaluation criteria. VOC surrogate recoveries for sample VMP-34 (20-22.5) 092711 were outside evaluation criteria. VOC MS/MSD recoveries were outside of evaluation criteria. Although not indicated in the laboratory case narrative, bromodichloromethane was detected in the equipment blank, and chloroform was detected in the equipment blank and trip blank TB092711-1. The compound TPH-GRO was qualified due to a greater than five times (5X) the reporting level difference in field duplicate pair, VMP-36 (10-12.5) 092711/ VMP-36 (10-12.5) 092711 DUP. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 1.7°C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

Yes

| Blank ID | Parameter | Analyte | Concentration |
|---|---|---|---|
| VMP-46 (30-31.5) 092711 EB | VOCs | Bromodichloromethane | 2.8 ug/L |
| VMP-46 (30-31.5) 092711 EB | VOCs | Chloroform | 4.9 ug/L |
| TB092711-1 | VOCs | Chloroform | 1.8 ug/L |

Analytical data that were reported non-detect or at concentrations greater than five times (5X) the associated blank concentration did not require qualification.

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSP1816-BS | VOCs | Acetone | **133** | NA | 70-130 |
| MSP1816-BS | VOCs | Acrolein | **284** | NA | 70-130 |
| MSP1817-BS | VOCs | Acrolein | **354** | NA | 70-130 |
| MSP1817-BS | VOCs | n-Butylbenzene | **134** | NA | 70-130 |
| MSP1817-BS | VOCs | p-Isopropyltoluene | **132** | NA | 70-130 |
| MSN2098-BS | VOCs | Acrolein | **206** | NA | 70-130 |
| MSN2098-BS | VOCs | Acrylonitrile | **564** | NA | 70-130 |

Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS MSN2098-BS was associated with trip blank samples TB092711-1 and TB092711-2. Trip blank samples are quality control samples and are not qualified. No qualification of data was required.

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

No

| Sample ID | Parameter | Surrogate | Recovery | Criteria |
|---|---|---|---|---|
| VMP-34 (20-22.5) 092711 Run #1 | VOCs | Toluene-$d_8$ | **152** | 70-130 |
| VMP-34 (20-22.5) 092711 Run #2 | VOCs | Toluene-$d_8$ | **142** | 70-130 |
| VMP-34 (20-22.5) 092711 Run #1 | VOCs | 4-Bromofluorobenzene | **146** | 70-130 |
| VMP-34 (20-22.5) 092711 Run #2 | VOCs | 4-Bromofluorobenzene | **137** | 70-130 |

Analytical data that required qualification based on surrogate data are in included in the table below. Analytical data reported as non-detect and associated with surrogate recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| VMP-34 (20-22.5) 092711 | VOCs | Benzene | **J** |
| VMP-34 (20-22.5) 092711 | VOCs | Bromomethane | **J** |

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| VMP-34 (20-22.5) 092711 | VOCs | n-Butylbenzene | **J** |
| VMP-34 (20-22.5) 092711 | VOCs | sec-Butylbenzene | **J** |
| VMP-34 (20-22.5) 092711 | VOCs | Ethylbenzene | **J** |
| VMP-34 (20-22.5) 092711 | VOCs | Isopropylbenzene | **J** |
| VMP-34 (20-22.5) 092711 | VOCs | n-Propylbenzene | **J** |
| VMP-34 (20-22.5) 092711 | VOCs | Toluene | **J** |
| VMP-34 (20-22.5) 092711 | VOCs | 1,2,4-Trimethylbenzene | **J** |
| VMP-34 (20-22.5) 092711 | VOCs | 1,2,5-Trimethylbenzene | **J** |
| VMP-34 (20-22.5) 092711 | VOCs | m,p-Xylene | **J** |
| VMP-34 (20-22.5) 092711 | VOCs | o-Xylene | **J** |
| VMP-34 (20-22.5) 092711 | VOCs | Xylene (total) | **J** |

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, sample VMP-34 (30-31.5) 092711 was spiked and analyzed for VOCs and TPH-GRO/DRO/ORO.

*Were MS/MSD recoveries within evaluation criteria?*

No

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/ RPD Criteria |
|---|---|---|---|---|---|
| VMP-34 (30-31.5) 092711 | VOCs | Acrolein | **414/393** | 7 | 70-130/30 |
| VMP-34 (30-31.5) 092711 | VOCs | Acrylonitrile | **151/146** | 4 | 70-130/30 |
| VMP-34 (30-31.5) 092711 | VOCs | 1,2-Dibromo-3-chloropropane | **135/144** | 5 | 70-130/30 |
| VMP-34 (30-31.5) 092711 | VOCs | Dichlorodifluoromethane | **132**/124 | 8 | 70-130/30 |
| VMP-34 (30-31.5) 092711 | VOCs | 1,4-Dioxane | **165/162** | 3 | 70-130/30 |
| VMP-34 (30-31.5) 092711 | VOCs | 2-Hexanone | **141/146** | 12 | 70-130/30 |
| VMP-34 (30-31.5) 092711 | VOCs | 4-Methyl-2-pentanone (MIBK) | **142/162** | 12 | 70-130/30 |
| VMP-34 (30-31.5) 092711 | VOCs | 1,1,2,2-Tetrachloroethane | **134**/128 | 6 | 70-130/30 |
| VMP-34 (30-31.5) 092711 | VOCs | 1,2,3-Trichloropropane | **142/138** | 4 | 70-130/30 |

USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone and LCS recoveries were within evaluation criteria with the exception of compounds listed and qualified as appropriate in Section 5.0 of this data review. No further qualification of the data was required.

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

Yes

| Field ID | Field Duplicate ID |
|---|---|
| VMP-36 (10-12.5) 092711 | VMP-36 (10-12.5) 092711 DUP |

*Were field duplicates within evaluation criteria?*

No

| Field ID | Field Duplicate ID | Parameter | Analyte | RPD | Qualification |
|---|---|---|---|---|---|
| VMP-36 (10-12.5) 092711 | VMP-36 (10-12.5) 092711 DUP | TPH-GRO | TPH-GRO | **>5X RL** | **J/J** |

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

No

New England ACCUTEST LABORATORIES

11/23/11





## Technical Report for

Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC4031

Sampling Date: 09/27/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **164**

Renewed on 1/29/2012

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Reza Pand
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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# Sample Summary

Shell Oil

Job No: MC4031

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| MC4031-1 | 09/27/11 | 09:55 | LR | 09/28/11 | SO | Soil | VMP34 (10-12.5)092711 |
| MC4031-2 | 09/27/11 | 10:10 | LR | 09/28/11 | SO | Soil | VMP34 (20-22.5)092711 |
| MC4031-3 | 09/27/11 | 10:30 | LR | 09/28/11 | SO | Soil | VMP34 (30-31.5)092711 |
| MC4031-3D | 09/27/11 | 10:30 | LR | 09/28/11 | SO | Soil Dup/MSD | VMP34 (30-31.5)092711 |
| MC4031-3S | 09/27/11 | 10:30 | LR | 09/28/11 | SO | Soil Matrix Spike | VMP34 (30-31.5)092711 |
| MC4031-4 | 09/27/11 | 09:35 | LR | 09/28/11 | AQ | Equipment Blank | VMP46 (30-31.5)092711 EB |
| MC4031-5 | 09/27/11 | 12:40 | LR | 09/28/11 | SO | Soil | VMP35 (10-12.5)092711 |
| MC4031-6 | 09/27/11 | 12:50 | LR | 09/28/11 | SO | Soil | VMP35 (20-22.5)092711 |
| MC4031-7 | 09/27/11 | 13:05 | LR | 09/28/11 | SO | Soil | VMP35 (30-31.5)092711 |
| MC4031-8 | 09/27/11 | 14:15 | LR | 09/28/11 | SO | Soil | VMP36 (10-12.5)092711 |
| MC4031-9 | 09/27/11 | 14:15 | LR | 09/28/11 | SO | Soil | VMP36 (10-12.5)092711 DUP |
| MC4031-10 | 09/27/11 | 14:25 | LR | 09/28/11 | SO | Soil | VMP36 (20-22.5)092711 |
| MC4031-11 | 09/27/11 | 14:35 | LR | 09/28/11 | SO | Soil | VMP36 (30-31.5)092711 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# Sample Summary
(continued)

Shell Oil

Job No: MC4031

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| MC4031-12 | 09/27/11 | 00:00 | LR | 09/28/11 | AQ | Trip Blank Water | TB092711-1 |
| MC4031-13 | 09/27/11 | 00:00 | LR | 09/28/11 | AQ | Trip Blank Water | TB092711-2 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC4031 |
| **Site:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East | **Report Date** | 10/13/2011 5:03:06 PM |

11 Sample(s), 2 Trip Blank(s) were collected on 09/27/2011 and were received at Accutest on 09/28/2011 properly preserved, at 1.7 Deg. C and intact. These Samples received an Accutest job number of MC4031. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix:** AQ **Batch ID:** MSN2098

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method speeific criteria.
- Sample(s) MC4106-1MS, MC4106-1MSD were used as the QC samples indicated.
- BS Recovery(s) for Acrolein, Acrylonitrile are outside control limits. Associated samples are non-detect for this compound.
- Matrix Spike Recovery(s) for Acrolein, Bromomethane, Carbon disulfide, Chloroethane, Chloromethane, Dichlorodifluoromethane, Trichlorofluoromethane, Vinyl chloride are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for Acetone, Acrolein, Bromomethane, Carbon disulfide, Chloroethane, Chloromethane, Dichlorodifluoromethane, Trichlorofluoromethane, Vinyl chloride are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MC4106-1MS/MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

**Matrix:** SO **Batch ID:** MSK1848

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC4051-4MS, MC4051-4MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MS/MSD Recovery(s) for 2-Hexanone, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

**Matrix:** SO **Batch ID:** MSP1816

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC3921-2MS, MC3921-2MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for Acetone are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Acetone are outside control limits. Outside control limits due to high level in sample relative to spike amount.
- Matrix Spike Duplicate Recovery(s) for 1,1,2,2-Tetrachloroethane, 1,1-Dichloroethene, 1,2,3-Trichloropropane, 1,2-Dibromo-3-chloropropane, 1,4-Dioxane, 2-Butanone (MEK), 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Dichlorodifluoromethane, Isopropylbenzene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MC4031-2 for 4-Bromofluorobenzene, Toluene-D8: Outside control limits due to possible matrix interference. Confirmed by reanalysis.
- MSP1816-BS for Acrolein: Outside control limits. Associated samples are non-detect for this compound.
- MC3921-2MS/MSD for Acrolein, Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

## Volatiles by GCMS By Method SW846 8260B

| Matrix: SO | Batch ID: MSP1816 |
|---|---|

- Matrix Spike Recovery(s) for 1,2,3-Trichloropropane, 1,4-Dioxane, Dichlorodifluoromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

| Matrix: SO | Batch ID: MSP1817 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC4031-3MS, MC4031-3MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for n-Butylbenzene, p-Isopropyltoluene are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,1,2,2-Tetrachloroethane, 1,2,3-Trichloropropane, 1,2-Dibromo-3-chloropropane, 1,4-Dioxane, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acrylonitrile, Dichlorodifluoromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,2,3-Trichloropropane, 1,2-Dibromo-3-chloropropane, 1,4-Dioxane, 2-Hexanone, 4-Methyl-2-pentanone (MIBK), Acrylonitrile are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MC4031-2: Confirmation run for surrogate recoveries.
- MSP1817-BS/MS/MSD for Acrolein: Outside control limits. Associated samples are non-detect for this compound.

## Volatiles by GC By Method SW846 8015

| Matrix: AQ | Batch ID: GBH1344 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC4031-4MS, MC4031-4MSD were used as the QC samples indicated.

| Matrix: SO | Batch ID: GBH1341 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC4194-1MS, MC4194-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- GBH1340-CC1043 utilized the same file as GBH1341-CC1043.

| Matrix: SO | Batch ID: GBH1343 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC4031-3MS, MC4031-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- GBH1343-CC1043 utilized the same file as GBH1342-CC1043.

## Extractables by GC By Method SW846-8015

| Matrix: AQ | Batch ID: OP26474 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC4242-1MS, MC4242-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for TPH (C10-C28) are outside control limits. Outside control limits due to possible matrix interference.

| Matrix: SO | Batch ID: OP26532 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC4031-3MS, MC4031-3MSD were used as the QC samples indicated.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix: SO | Batch ID: GN36350 |
|---|---|

- Sample(s) MC4031-3DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC4031).

New England ACCUTEST LABORATORIES

## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP34 (10-12.5)092711 | | |
| Lab Sample ID: | MC4031-1 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 93.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P55486.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.39 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 6.1 | 1.4 | ug/kg | |
| 107-02-8 | Acrolein | ND | 31 | 21 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6.1 | 2.5 | ug/kg | |
| 71-43-2 | Benzene | 3.1 | 0.61 | 0.15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 6.1 | 0.23 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6.1 | 1.3 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.4 | 0.26 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.4 | 0.58 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.4 | 0.83 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 6.1 | 1.5 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 6.1 | 1.5 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 6.1 | 0.20 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 6.1 | 0.80 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 6.1 | 1.2 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.4 | 0.27 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.4 | 0.11 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6.1 | 0.32 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6.1 | 6.1 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.4 | 0.18 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6.1 | 0.26 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 6.1 | 0.17 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6.1 | 1.4 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6.1 | 6.1 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.4 | 0.80 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.4 | 0.23 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.4 | 0.18 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.4 | 0.18 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.4 | 0.17 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.4 | 0.42 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.4 | 0.19 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.4 | 0.18 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.4 | 0.39 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP34 (10-12.5)092711 | | |
| Lab Sample ID: | MC4031-1 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 93.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.4 | 0.33 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.4 | 0.31 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.4 | 0.28 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6.1 | 1.4 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6.1 | 0.23 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6.1 | 0.24 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.4 | 1.2 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.4 | 0.84 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 31 | 31 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6.1 | 3.8 | ug/kg | |
| 100-41-4 | Ethylbenzene | 12.7 | 2.4 | 0.16 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 6.1 | 6.1 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6.1 | 1.3 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 6.1 | 0.19 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 6.1 | 0.20 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.4 | 0.76 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6.1 | 1.0 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6.1 | 0.37 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.4 | 0.44 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 6.1 | 6.1 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 1.6 | 6.1 | 0.20 | ug/kg | J |
| 100-42-5 | Styrene | ND | 6.1 | 0.61 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6.1 | 1.2 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.4 | 0.22 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.4 | 0.21 | ug/kg | |
| 108-88-3 | Toluene | 10.6 | 6.1 | 0.22 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6.1 | 1.3 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6.1 | 6.1 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.4 | 0.22 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.4 | 0.31 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.4 | 0.24 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.4 | 1.1 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6.1 | 0.26 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 6.1 | 0.19 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 6.1 | 0.22 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 6.1 | 1.4 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.4 | 0.79 | ug/kg | |
| | m,p-Xylene | 3.0 | 2.4 | 0.31 | ug/kg | |
| 95-47-6 | o-Xylene | 1.2 | 2.4 | 0.23 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 4.2 | 2.4 | 0.15 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP34 (10-12.5)092711 | | |
| Lab Sample ID: | MC4031-1 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 93.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 118% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 110% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP34 (10-12.5)092711 | | |
| Lab Sample ID: | MC4031-1 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8015 | Percent Solids: | 93.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24404.D | 1 | 10/06/11 | WS | n/a | n/a | GBH134I |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.98 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 2.68 | 14 | 2.6 | mg/kg | J |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 85% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP34 (10-12.5)092711 | | |
| Lab Sample ID: | MC4031-1 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846-8015 SW846 3545 | Percent Solids: | 93.1 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31620.D | 1 | 10/10/11 | KD | 10/08/11 | OP26532 | GBG1136 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.2 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 18 | 13 | mg/kg | |
| | TPH (> C28-C40) | ND | 18 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 76% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP34 (20-22.5)092711 | | |
| Lab Sample ID: | MC4031-2 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 86.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P55487.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| Run #2 [a] | P55509.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.63 g | 5.0 ml |
| Run #2 | 5.09 g | 5.0 ml |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.1 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 26 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.1 | 2.1 | ug/kg | |
| 71-43-2 | Benzene | 6.5 J | 0.51 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.1 | 0.20 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.1 | 1.1 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.48 | ug/kg | |
| 74-83-9 | Bromomethane | 2.0 J | 2.0 | 0.69 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.1 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 11.8 J | 5.1 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 3.0 J | 5.1 | 0.17 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 5.1 | 0.67 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.1 | 0.99 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.23 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.096 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.1 | 0.27 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.1 | 5.1 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.1 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.1 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.1 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.1 | 5.1 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.67 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.20 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.35 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.16 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.33 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP34 (20-22.5)092711 | | |
| Lab Sample ID: | MC4031-2 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 86.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.28 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.26 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.1 | 1.2 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.1 | 0.19 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.1 | 0.20 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.70 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 26 | 26 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.1 | 3.2 | ug/kg | |
| 100-41-4 | Ethylbenzene | 13.3 J | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.1 | 5.1 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.1 | 1.1 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 5.1 J | 5.1 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.1 | 0.17 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.63 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.1 | 0.86 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.1 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.37 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.1 | 5.1 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 7.2 J | 5.1 | 0.17 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.1 | 0.51 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.1 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | 12.1 J | 5.1 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.1 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.1 | 5.1 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.19 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.26 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.94 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.1 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 4.1 J | 5.1 | 0.16 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.1 J | 5.1 | 0.19 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 5.1 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.66 | ug/kg | |
| | m,p-Xylene | 5.1 J | 2.0 | 0.26 | ug/kg | |
| 95-47-6 | o-Xylene | 1.7 J | 2.0 | 0.19 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 6.8 J | 2.0 | 0.13 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP34 (20-22.5)092711 | | |
| Lab Sample ID: | MC4031-2 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 86.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 118% | 111% | 70-130% |
| 2037-26-5 | Toluene-D8 | 152% [b] | 142% [b] | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 146% [b] | 137% [b] | 70-130% |

(a) Confirmation run for surrogate recoveries.
(b) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP34 (20-22.5)092711 | | |
| Lab Sample ID: | MC4031-2 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8015 | Percent Solids: | 86.7 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24405.D | 1 | 10/06/11 | WS | n/a | n/a | GBH1341 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.69 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 13 | 2.5 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 83% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP34 (20-22.5)092711 | | |
| **Lab Sample ID:** | MC4031-2 | **Date Sampled:** | 09/27/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/28/11 |
| **Method:** | SW846-8015 SW846 3545 | **Percent Solids:** | 86.7 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31616.D | 1 | 10/10/11 | KD | 10/08/11 | OP26532 | GBG1136 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.6 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 19 | 14 | mg/kg | |
| | TPH (> C28-C40) | ND | 19 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 72% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP34 (30-31.5)092711 | | |
| Lab Sample ID: | MC4031-3 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 92.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P55501.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.69 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.8 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 29 | 20 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.8 | 2.3 | ug/kg | |
| 71-43-2 | Benzene | 2.1 | 0.58 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.8 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.8 | 1.2 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.3 | 0.24 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.3 | 0.54 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.3 | 0.78 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.8 | 1.4 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.8 | 1.5 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.8 | 0.19 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.8 | 0.75 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.8 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.3 | 0.26 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.3 | 0.11 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.8 | 0.30 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.8 | 5.8 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.3 | 0.17 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.8 | 0.25 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.8 | 0.16 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.8 | 1.3 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.8 | 5.8 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.3 | 0.75 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.3 | 0.22 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.3 | 0.17 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.3 | 0.17 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.3 | 0.16 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.3 | 0.39 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.3 | 0.18 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.3 | 0.17 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.3 | 0.37 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP34 (30-31.5)092711 | | |
| Lab Sample ID: | MC4031-3 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 92.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.3 | 0.31 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.3 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.3 | 0.26 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.8 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.8 | 0.21 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.8 | 0.22 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.3 | 1.2 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.3 | 0.79 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 29 | 29 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.8 | 3.6 | ug/kg | |
| 100-41-4 | Ethylbenzene | 6.5 | 2.3 | 0.15 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.8 | 5.8 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.8 | 1.2 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.8 | 0.18 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.8 | 0.19 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.3 | 0.71 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.8 | 0.97 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.8 | 0.35 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.3 | 0.42 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.8 | 5.8 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.8 | 0.19 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.8 | 0.58 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.8 | 1.2 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.3 | 0.20 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.3 | 0.19 | ug/kg | |
| 108-88-3 | Toluene | 6.5 | 5.8 | 0.21 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.8 | 1.3 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.8 | 5.8 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.3 | 0.21 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.3 | 0.29 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.3 | 0.23 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.3 | 1.1 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.8 | 0.24 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.8 | 0.18 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.8 | 0.21 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.8 | 1.4 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.3 | 0.74 | ug/kg | |
| | m,p-Xylene | 1.8 | 2.3 | 0.29 | ug/kg | J |
| 95-47-6 | o-Xylene | ND | 2.3 | 0.21 | ug/kg | |
| 1330-20-7 | Xylene (total) | 1.8 | 2.3 | 0.15 | ug/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP34 (30-31.5)092711 | | |
| **Lab Sample ID:** | MC4031-3 | **Date Sampled:** | 09/27/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/28/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | 92.3 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

**VOA Special List**

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 116% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 113% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP34 (30-31.5)092711 | | |
| Lab Sample ID: | MC4031-3 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8015 | Percent Solids: | 92.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24432.D | 1 | 10/08/11 | AF | n/a | n/a | GBH1343 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.14 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 14 | 2.6 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 89% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP34 (30-31.5)092711 | | |
| Lab Sample ID: | MC4031-3 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846-8015 SW846 3545 | Percent Solids: | 92.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31625.D | 1 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1135 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.8 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 88% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP46 (30-31.5)092711 EB | | |
| Lab Sample ID: | MC4031-4 | Date Sampled: | 09/27/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | N55946.D | 1 | 10/10/11 | DFT | n/a | n/a | MSN2098 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | 2.8 | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | 4.9 | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP46 (30-31.5)092711 EB | | |
| Lab Sample ID: | MC4031-4 | Date Sampled: | 09/27/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP46 (30-31.5)092711 EB | | |
| **Lab Sample ID:** | MC4031-4 | **Date Sampled:** | 09/27/11 |
| **Matrix:** | AQ - Equipment Blank | **Date Received:** | 09/28/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | n/a |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 91% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 93% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP46 (30-31.5)092711 EB | | |
| Lab Sample ID: | MC4031-4 | Date Sampled: | 09/27/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 09/28/11 |
| Method: | SW846 8015 | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24449.D | 1 | 10/10/11 | WS | n/a | n/a | GBH1344 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 0.10 | 0.070 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 94% | | 60-126% |

ND = Not detected MDL - Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte fonnd in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP46 (30-31.5)092711 EB | | |
| **Lab Sample ID:** | MC4031-4 | **Date Sampled:** | 09/27/11 |
| **Matrix:** | AQ - Equipment Blank | **Date Received:** | 09/28/11 |
| **Method:** | SW846-8015 SW846 3510C | **Percent Solids:** | n/a |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31662.D | 1 | 10/11/11 | KD | 10/04/11 | OP26474 | GBG1139 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 1000 ml | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 0.20 | 0.14 | mg/l | |
| | TPH (> C28-C40) | ND | 0.20 | 0.14 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 112% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP35 (10-12.5)092711 | | |
| Lab Sample ID: | MC4031-5 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 84.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55333.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.92 g | 10.0 ml | 50.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 1300 | 300 | ug/kg | |
| 107-02-8 | Acrolein | ND | 6500 | 4400 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 1300 | 520 | ug/kg | |
| 71-43-2 | Benzene | 570 | 130 | 33 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 1300 | 50 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 1300 | 270 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 520 | 55 | ug/kg | |
| 75-25-2 | Bromoform | ND | 520 | 120 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 520 | 180 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 1300 | 310 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 1630 | 1300 | 330 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 940 | 1300 | 43 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 1300 | 170 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 1300 | 250 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 520 | 59 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 520 | 24 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 1300 | 68 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 1300 | 1300 | ug/kg | |
| 67-66-3 | Chloroform | ND | 520 | 39 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 1300 | 56 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 1300 | 36 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 1300 | 290 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1300 | 1300 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 520 | 170 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 520 | 50 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 520 | 39 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 520 | 38 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 520 | 36 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 520 | 89 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 520 | 40 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 520 | 38 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 520 | 83 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.5

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP35 (10-12.5)092711 | | |
| Lab Sample ID: | MC4031-5 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 84.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 520 | 71 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 520 | 66 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 520 | 60 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 1300 | 300 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 1300 | 48 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 1300 | 50 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 520 | 260 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 520 | 180 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 6500 | 6500 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 1300 | 810 | ug/kg | |
| 100-41-4 | Ethylbenzene | 692 | 520 | 34 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 1300 | 1300 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 1300 | 270 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 1730 | 1300 | 41 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | 731 | 1300 | 42 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 520 | 160 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 1300 | 220 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 1300 | 80 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 520 | 94 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 1300 | 1300 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 2110 | 1300 | 42 | ug/kg | |
| 100-42-5 | Styrene | ND | 1300 | 130 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1300 | 260 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 520 | 46 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 520 | 44 | ug/kg | |
| 108-88-3 | Toluene | 240 | 1300 | 47 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1300 | 290 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1300 | 1300 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 520 | 48 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 520 | 66 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 520 | 51 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 520 | 240 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1300 | 55 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 1300 | 41 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 171 | 1300 | 47 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 1300 | 310 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 520 | 170 | ug/kg | |
| | m,p-Xylene | 785 | 520 | 66 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 520 | 48 | ug/kg | |
| 1330-20-7 | Xylene (total) | 785 | 520 | 33 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP35 (10-12.5)092711 | | |
| Lab Sample ID: | MC4031-5 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 84.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 107% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 105% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 114% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP35 (10-12.5)092711 | | |
| Lab Sample ID: | MC4031-5 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8015 | Percent Solids: | 84.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24436.D | 1 | 10/09/11 | AF | n/a | n/a | GBH1343 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.96 g | 10.0 ml | 20.0 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 909 | 65 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 99% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP35 (10-12.5)092711 | | |
| Lab Sample ID: | MC4031-5 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846-8015 SW846 3545 | Percent Solids: | 84.0 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31629.D | 1 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1135 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.5 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 619 | 19 | 15 | mg/kg | |
| | TPH (>C28-C40) | ND | 19 | 15 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 86% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP35 (20-22.5)092711 | | |
| Lab Sample ID: | MC4031-6 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 88.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P55488.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.82 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.9 | 1.4 | ug/kg | |
| 107-02-8 | Acrolein | ND | 29 | 20 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.9 | 2.4 | ug/kg | |
| 71-43-2 | Benzene | 73.7 | 0.59 | 0.15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.9 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.9 | 1.2 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.4 | 0.25 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.4 | 0.55 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.4 | 0.79 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.9 | 1.4 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 12.5 | 5.9 | 1.5 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.9 | 0.19 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.9 | 0.77 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.9 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.4 | 0.26 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.4 | 0.11 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.9 | 0.31 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.9 | 5.9 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.4 | 0.17 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.9 | 0.25 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.9 | 0.16 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.9 | 1.3 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.9 | 5.9 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.4 | 0.77 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.4 | 0.22 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.4 | 0.18 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.4 | 0.17 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.4 | 0.16 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.4 | 0.40 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.4 | 0.18 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.4 | 0.17 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.4 | 0.37 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP35 (20-22.5)092711 | | |
| Lab Sample ID: | MC4031-6 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 88.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.4 | 0.32 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.4 | 0.30 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.4 | 0.27 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.9 | 1.4 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.9 | 0.22 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.9 | 0.23 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.4 | 1.2 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.4 | 0.81 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 29 | 29 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.9 | 3.7 | ug/kg | |
| 100-41-4 | Ethylbenzene | 26.9 | 2.4 | 0.15 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.9 | 5.9 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.9 | 1.2 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 2.8 | 5.9 | 0.19 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | ND | 5.9 | 0.19 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.4 | 0.73 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.9 | 0.99 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.9 | 0.36 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.4 | 0.42 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.9 | 5.9 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 5.3 | 5.9 | 0.19 | ug/kg | J |
| 100-42-5 | Styrene | ND | 5.9 | 0.59 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.9 | 1.2 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.4 | 0.21 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.4 | 0.20 | ug/kg | |
| 108-88-3 | Toluene | 3.5 | 5.9 | 0.21 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.9 | 1.3 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.9 | 5.9 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.4 | 0.22 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.4 | 0.30 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.4 | 0.23 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.4 | 1.1 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.9 | 0.25 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 11.6 | 5.9 | 0.19 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 3.5 | 5.9 | 0.21 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 5.9 | 1.4 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.4 | 0.76 | ug/kg | |
| | m,p-Xylene | 33.3 | 2.4 | 0.30 | ug/kg | |
| 95-47-6 | o-Xylene | 4.8 | 2.4 | 0.22 | ug/kg | |
| 1330-20-7 | Xylene (total) | 38.1 | 2.4 | 0.15 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP35 (20-22.5)092711 | | |
| Lab Sample ID: | MC4031-6 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 88.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 82% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 96% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP35 (20-22.5)092711 | | |
| Lab Sample ID: | MC4031-6 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8015 | Percent Solids: | 88.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24437.D | 1 | 10/09/11 | AF | n/a | n/a | GBH1343 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.66 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 4.74 | 16 | 3.1 | mg/kg | J |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 92% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP35 (20-22.5)092711 | | |
| **Lab Sample ID:** | MC4031-6 | **Date Sampled:** | 09/27/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/28/11 |
| **Method:** | SW846-8015 SW846 3545 | **Percent Solids:** | 88.2 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31631.D | 1 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1135 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.6 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 33.6 | 18 | 14 | mg/kg | |
| | TPH (>C28-C40) | ND | 18 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 72% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP35 (30-31.5)092711 | | |
| Lab Sample ID: | MC4031-7 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 92.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55332.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.62 g | 10.0 ml | 100 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 600 | 140 | ug/kg | |
| 107-02-8 | Acrolein | ND | 3000 | 2000 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 600 | 240 | ug/kg | |
| 71-43-2 | Benzene | ND | 60 | 15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 600 | 23 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 600 | 120 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 240 | 25 | ug/kg | |
| 75-25-2 | Bromoform | ND | 240 | 57 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 240 | 81 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 600 | 140 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 600 | 150 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 600 | 20 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 600 | 79 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 600 | 120 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 240 | 27 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 240 | 11 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 600 | 31 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 600 | 600 | ug/kg | |
| 67-66-3 | Chloroform | ND | 240 | 18 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 600 | 26 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 600 | 17 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 600 | 130 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 600 | 600 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 240 | 78 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 240 | 23 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 240 | 18 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 240 | 17 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 240 | 17 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 240 | 41 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 240 | 18 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 240 | 17 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 240 | 38 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP35 (30-31.5)092711 | | |
| Lab Sample ID: | MC4031-7 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 92.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 240 | 33 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 240 | 30 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 240 | 27 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 600 | 140 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 600 | 22 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 600 | 23 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 240 | 120 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 240 | 82 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 3000 | 3000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 600 | 370 | ug/kg | |
| 100-41-4 | Ethylbenzene | 175 | 240 | 16 | ug/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 600 | 600 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 600 | 130 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 46.1 | 600 | 19 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | ND | 600 | 19 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 240 | 74 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 600 | 100 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 600 | 37 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 240 | 43 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 600 | 600 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 50.9 | 600 | 19 | ug/kg | J |
| 100-42-5 | Styrene | ND | 600 | 60 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 600 | 120 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 240 | 21 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 240 | 20 | ug/kg | |
| 108-88-3 | Toluene | ND | 600 | 22 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 600 | 130 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 600 | 600 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 240 | 22 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 240 | 31 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 240 | 24 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 240 | 110 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 600 | 25 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 233 | 600 | 19 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 77.1 | 600 | 22 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 600 | 140 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 240 | 77 | ug/kg | |
| | m,p-Xylene | 112 | 240 | 30 | ug/kg | J |
| 95-47-6 | o-Xylene | ND | 240 | 22 | ug/kg | |
| 1330-20-7 | Xylene (total) | 112 | 240 | 15 | ug/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.7

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP35 (30-31.5)092711 | | |
| Lab Sample ID: | MC4031-7 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 92.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 96% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 107% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 110% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP35 (30-31.5)092711 | | |
| **Lab Sample ID:** | MC4031-7 | **Date Sampled:** | 09/27/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/28/11 |
| **Method:** | SW846 8015 | **Percent Solids:** | 92.9 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24438.D | 1 | 10/09/11 | AF | n/a | n/a | GBH1343 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.61 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 12.4 | 12 | 2.3 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 90% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP35 (30-31.5)092711 | | |
| Lab Sample ID: | MC4031-7 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846-8015 SW846 3545 | Percent Solids: | 92.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31627.D | 1 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1135 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.5 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 72% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (10-12.5)092711 | | |
| Lab Sample ID: | MC4031-8 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 88.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, 1L | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55334.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 1.87 g | 10.0 ml | 50.0 ul |
| Run #2 | | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 3100 | 720 | ug/kg | |
| 107-02-8 | Acrolein | ND | 15000 | 10000 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 3100 | 1200 | ug/kg | |
| 71-43-2 | Benzene | ND | 310 | 77 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 3100 | 120 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 3100 | 640 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 1200 | 130 | ug/kg | |
| 75-25-2 | Bromoform | ND | 1200 | 290 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 1200 | 420 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 3100 | 740 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 4470 | 3100 | 780 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 2750 | 3100 | 100 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 3100 | 400 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 3100 | 600 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 1200 | 140 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 1200 | 58 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 3100 | 160 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 3100 | 3100 | ug/kg | |
| 67-66-3 | Chloroform | ND | 1200 | 92 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 3100 | 130 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 3100 | 87 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 3100 | 690 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 3100 | 3100 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 1200 | 400 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 1200 | 120 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1200 | 93 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1200 | 90 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1200 | 87 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 1200 | 210 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1200 | 94 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1200 | 90 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1200 | 200 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (10-12.5)092711 | | |
| Lab Sample ID: | MC4031-8 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 88.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1200 | 170 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1200 | 160 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 1200 | 140 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 3100 | 720 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 3100 | 110 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 3100 | 120 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1200 | 620 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1200 | 420 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 15000 | 15000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 3100 | 1900 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 1200 | 80 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 3100 | 3100 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 3100 | 650 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 2500 | 3100 | 98 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 1600 | 3100 | 100 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1200 | 380 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 3100 | 520 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 3100 | 190 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 1200 | 220 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 3100 | 3100 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 2810 | 3100 | 100 | ug/kg | J |
| 100-42-5 | Styrene | ND | 3100 | 310 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 3100 | 620 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1200 | 110 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 1200 | 100 | ug/kg | |
| 108-88-3 | Toluene | ND | 3100 | 110 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 3100 | 680 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 3100 | 3100 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1200 | 110 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1200 | 160 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 1200 | 120 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 1200 | 570 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 3100 | 130 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 3100 | 98 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 3100 | 110 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 3100 | 730 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 1200 | 400 | ug/kg | |
| | m,p-Xylene | 1050 | 1200 | 160 | ug/kg | J |
| 95-47-6 | o-Xylene | ND | 1200 | 110 | ug/kg | |
| 1330-20-7 | Xylene (total) | 1050 | 1200 | 78 | ug/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (10-12.5)092711 | | |
| Lab Sample ID: | MC4031-8 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 88.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 112% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 107% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 116% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (10-12.5)092711 | | |
| Lab Sample ID: | MC4031-8 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8015 | Percent Solids: | 88.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24435.D | 1 | 10/08/11 | AF | n/a | n/a | GBH1343 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 8.82 g | 10.0 ml | 20.0 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 970 J | 35 | 6.7 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 95% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (10-12.5)092711 | | |
| Lab Sample ID: | MC4031-8 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846-8015 SW846 3545 | Percent Solids: | 88.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31639.D | 1 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1135 |
| Run #2 | BG31648.D | 5 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1137 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.4 g | 1.0 ml |
| Run #2 | 15.4 g | 1.0 ml |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 2450 [a] | 92 | 70 | mg/kg | |
| | TPH (>C28-C40) | 63.6 | 18 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 108% | 66% | 40-140% |

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (10-12.5)092711 DUP | | |
| Lab Sample ID: | MC4031-9 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 86.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55335.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.38 g | 10.0 ml | 50.0 ul |
| Run #2 | | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 1400 | 320 | ug/kg | |
| 107-02-8 | Acrolein | ND | 7000 | 4700 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 1400 | 560 | ug/kg | |
| 71-43-2 | Benzene | ND | 140 | 35 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 1400 | 53 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 1400 | 290 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 560 | 58 | ug/kg | |
| 75-25-2 | Bromoform | ND | 560 | 130 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 560 | 190 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 1400 | 330 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 858 | 1400 | 350 | ug/kg | J |
| 135-98-8 | sec-Butylbenzene | 533 | 1400 | 46 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 1400 | 180 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 1400 | 270 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 560 | 62 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 560 | 26 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 1400 | 72 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 1400 | 1400 | ug/kg | |
| 67-66-3 | Chloroform | ND | 560 | 41 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 1400 | 60 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 1400 | 39 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 1400 | 310 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 1400 | 1400 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 560 | 180 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 560 | 53 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 560 | 42 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 560 | 40 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 560 | 39 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 560 | 95 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 560 | 42 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 560 | 40 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 560 | 88 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (10-12.5)092711 DUP | | |
| Lab Sample ID: | MC4031-9 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 86.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 560 | 75 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 560 | 70 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 560 | 63 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 1400 | 320 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 1400 | 51 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 1400 | 54 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 560 | 280 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 560 | 190 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 7000 | 7000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 1400 | 870 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 560 | 36 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 1400 | 1400 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 1400 | 290 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 497 | 1400 | 44 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 313 | 1400 | 45 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 560 | 170 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 1400 | 230 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 1400 | 85 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 560 | 100 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 1400 | 1400 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 533 | 1400 | 45 | ug/kg | J |
| 100-42-5 | Styrene | ND | 1400 | 140 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 1400 | 280 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 560 | 49 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 560 | 47 | ug/kg | |
| 108-88-3 | Toluene | ND | 1400 | 50 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 1400 | 310 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 1400 | 1400 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 560 | 51 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 560 | 71 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 560 | 54 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 560 | 260 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 1400 | 58 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 1400 | 44 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 466 | 1400 | 51 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 1400 | 330 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 560 | 180 | ug/kg | |
| | m,p-Xylene | ND | 560 | 70 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 560 | 51 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 560 | 35 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP36 (10-12.5)092711 DUP | | |
| **Lab Sample ID:** | MC4031-9 | **Date Sampled:** | 09/27/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/28/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | 86.8 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, 1L | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 109% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 105% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 112% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP36 (10-12.5)092711 DUP | | |
| **Lab Sample ID:** | MC4031-9 | **Date Sampled:** | 09/27/11 |
| **Matrix:** | SO - Soil | **Date Received:** | 09/28/11 |
| **Method:** | SW846 8015 | **Percent Solids:** | 86.8 |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24439.D | 1 | 10/09/11 | AF | n/a | n/a | GBH1343 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.58 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 35.9 J | 13 | 2.5 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 94% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (10-12.5)092711 DUP | | |
| Lab Sample ID: | MC4031-9 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846-8015 SW846 3545 | Percent Solids: | 86.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #I | BG31641.D | I | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1135 |
| Run #2 | BG31649.D | 5 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1138 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.0 g | 1.0 ml |
| Run #2 | 15.0 g | 1.0 ml |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 2780 [a] | 96 | 72 | mg/kg | |
| | TPH (>C28-C40) | 73.6 | 19 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 106% | 100% | 40-140% |

(a) Result is from Run# 2

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (20-22.5)092711 | | |
| Lab Sample ID: | MC4031-10 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 83.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K55336.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.71 g | 10.0 ml | 20.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 2900 | 670 | ug/kg | |
| 107-02-8 | Acrolein | ND | 14000 | 9700 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 2900 | 1200 | ug/kg | |
| 71-43-2 | Benzene | ND | 290 | 72 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 2900 | 110 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 2900 | 600 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 1200 | 120 | ug/kg | |
| 75-25-2 | Bromoform | ND | 1200 | 270 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 1200 | 390 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 2900 | 690 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 2900 | 730 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 133 | 2900 | 95 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 2900 | 380 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 2900 | 560 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 1200 | 130 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 1200 | 54 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 2900 | 150 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 2900 | 2900 | ug/kg | |
| 67-66-3 | Chloroform | ND | 1200 | 86 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 2900 | 120 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 2900 | 81 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 2900 | 650 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 2900 | 2900 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 1200 | 380 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 1200 | 110 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1200 | 87 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1200 | 83 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1200 | 81 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 1200 | 200 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1200 | 88 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1200 | 84 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1200 | 180 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (20-22.5)092711 | | |
| Lab Sample ID: | MC4031-10 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 83.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1200 | 160 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1200 | 150 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 1200 | 130 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 2900 | 670 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 2900 | 110 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 2900 | 110 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1200 | 580 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1200 | 390 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 14000 | 14000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 2900 | 1800 | ug/kg | |
| 100-41-4 | Ethylbenzene | 1090 | 1200 | 75 | ug/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 2900 | 2900 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 2900 | 610 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 380 | 2900 | 92 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 174 | 2900 | 93 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1200 | 360 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 2900 | 480 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 2900 | 180 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 1200 | 210 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 2900 | 2900 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 491 | 2900 | 93 | ug/kg | J |
| 100-42-5 | Styrene | ND | 2900 | 290 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 2900 | 580 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1200 | 100 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 1200 | 97 | ug/kg | |
| 108-88-3 | Toluene | ND | 2900 | 100 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 2900 | 640 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 2900 | 2900 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1200 | 110 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1200 | 150 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 1200 | 110 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 1200 | 530 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 2900 | 120 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1020 | 2900 | 91 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 2900 | 100 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 2900 | 680 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 1200 | 370 | ug/kg | |
| | m,p-Xylene | 3870 | 1200 | 150 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 1200 | 110 | ug/kg | |
| 1330-20-7 | Xylene (total) | 3870 | 1200 | 73 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (20-22.5)092711 | | |
| Lab Sample ID: | MC4031-10 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 83.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 107% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 105% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 108% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.10

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (20-22.5)092711 | | |
| Lab Sample ID: | MC4031-10 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8015 | Percent Solids: | 83.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24433.D | 1 | 10/08/11 | AF | n/a | n/a | GBH1343 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 5.61 g | 10.0 ml | 50.0 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 4920 | 23 | 4.5 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 93% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (20-22.5)092711 | | |
| Lab Sample ID: | MC4031-10 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846-8015 SW846 3545 | Percent Solids: | 83.2 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31630.D | 50 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1136 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.6 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 1070 | 960 | 730 | mg/kg | |
| | TPH (>C28-C40) | ND | 960 | 730 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 84% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (30-31.5)092711 | | |
| Lab Sample ID: | MC4031-11 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 95.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P55489.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.59 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.7 | 1.3 | ug/kg | |
| 107-02-8 | Acrolein | ND | 29 | 19 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.7 | 2.3 | ug/kg | |
| 71-43-2 | Benzene | 20.5 | 0.57 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.7 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.7 | 1.2 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.3 | 0.24 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.3 | 0.54 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.3 | 0.77 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.7 | 1.4 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.7 | 1.4 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.7 | 0.19 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.7 | 0.75 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.7 | 1.1 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.3 | 0.26 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.3 | 0.11 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.7 | 0.30 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.7 | 5.7 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.3 | 0.17 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.7 | 0.25 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.7 | 0.16 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.7 | 1.3 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.7 | 5.7 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.3 | 0.74 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.3 | 0.22 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.3 | 0.17 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.3 | 0.17 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.3 | 0.16 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.3 | 0.39 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.3 | 0.17 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.3 | 0.17 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.3 | 0.36 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.11

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (30-31.5)092711 | | |
| Lab Sample ID: | MC4031-11 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 95.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.3 | 0.31 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.3 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.3 | 0.26 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.7 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.7 | 0.21 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.7 | 0.22 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.3 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.3 | 0.78 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 29 | 29 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.7 | 3.6 | ug/kg | |
| 100-41-4 | Ethylbenzene | 11.8 | 2.3 | 0.15 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.7 | 5.7 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.7 | 1.2 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.7 | 0.18 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.7 | 0.19 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.3 | 0.71 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.7 | 0.96 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.7 | 0.35 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.3 | 0.41 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.7 | 5.7 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 1.7 | 5.7 | 0.18 | ug/kg | J |
| 100-42-5 | Styrene | ND | 5.7 | 0.57 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.7 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.3 | 0.20 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.3 | 0.19 | ug/kg | |
| 108-88-3 | Toluene | 7.3 | 5.7 | 0.20 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.7 | 1.3 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.7 | 5.7 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.3 | 0.21 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.3 | 0.29 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.3 | 0.22 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.3 | 1.1 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.7 | 0.24 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 5.5 | 5.7 | 0.18 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.6 | 5.7 | 0.21 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 5.7 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.3 | 0.74 | ug/kg | |
| | m,p-Xylene | 25.6 | 2.3 | 0.29 | ug/kg | |
| 95-47-6 | o-Xylene | 7.2 | 2.3 | 0.21 | ug/kg | |
| 1330-20-7 | Xylene (total) | 32.8 | 2.3 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (30-31.5)092711 | | |
| Lab Sample ID: | MC4031-11 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | 95.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 85% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 108% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (30-31.5)092711 | | |
| Lab Sample ID: | MC4031-11 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846 8015 | Percent Solids: | 95.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24440.D | 1 | 10/09/11 | AF | n/a | n/a | GBH1343 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.82 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 4.62 | 11 | 2.1 | mg/kg | J |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 88% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP36 (30-31.5)092711 | | |
| Lab Sample ID: | MC4031-11 | Date Sampled: | 09/27/11 |
| Matrix: | SO - Soil | Date Received: | 09/28/11 |
| Method: | SW846-8015 SW846 3545 | Percent Solids: | 95.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31614.D | 1 | 10/10/11 | KD | 10/08/11 | OP26532 | GBG1136 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.5 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 74% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB092711-1 | | |
| Lab Sample ID: | MC4031-12 | Date Sampled: | 09/27/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | N55934.D | 1 | 10/10/11 | DFT | n/a | n/a | MSN2098 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | 1.8 | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB092711-1 | | |
| Lab Sample ID: | MC4031-12 | Date Sampled: | 09/27/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB092711-1 | | |
| Lab Sample ID: | MC4031-12 | Date Sampled: | 09/27/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 90% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 93% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB092711-2 | | |
| Lab Sample ID: | MC4031-13 | Date Sampled: | 09/27/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | N55947.D | 1 | 10/10/11 | DFT | n/a | n/a | MSN2098 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB092711-2 | | |
| Lab Sample ID: | MC4031-13 | Date Sampled: | 09/27/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3-13

| | | | |
|---|---|---|---|
| Client Sample ID: | TB092711-2 | | |
| Lab Sample ID: | MC4031-13 | Date Sampled: | 09/27/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 09/28/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 90% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 93% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES



## Misc. Forms

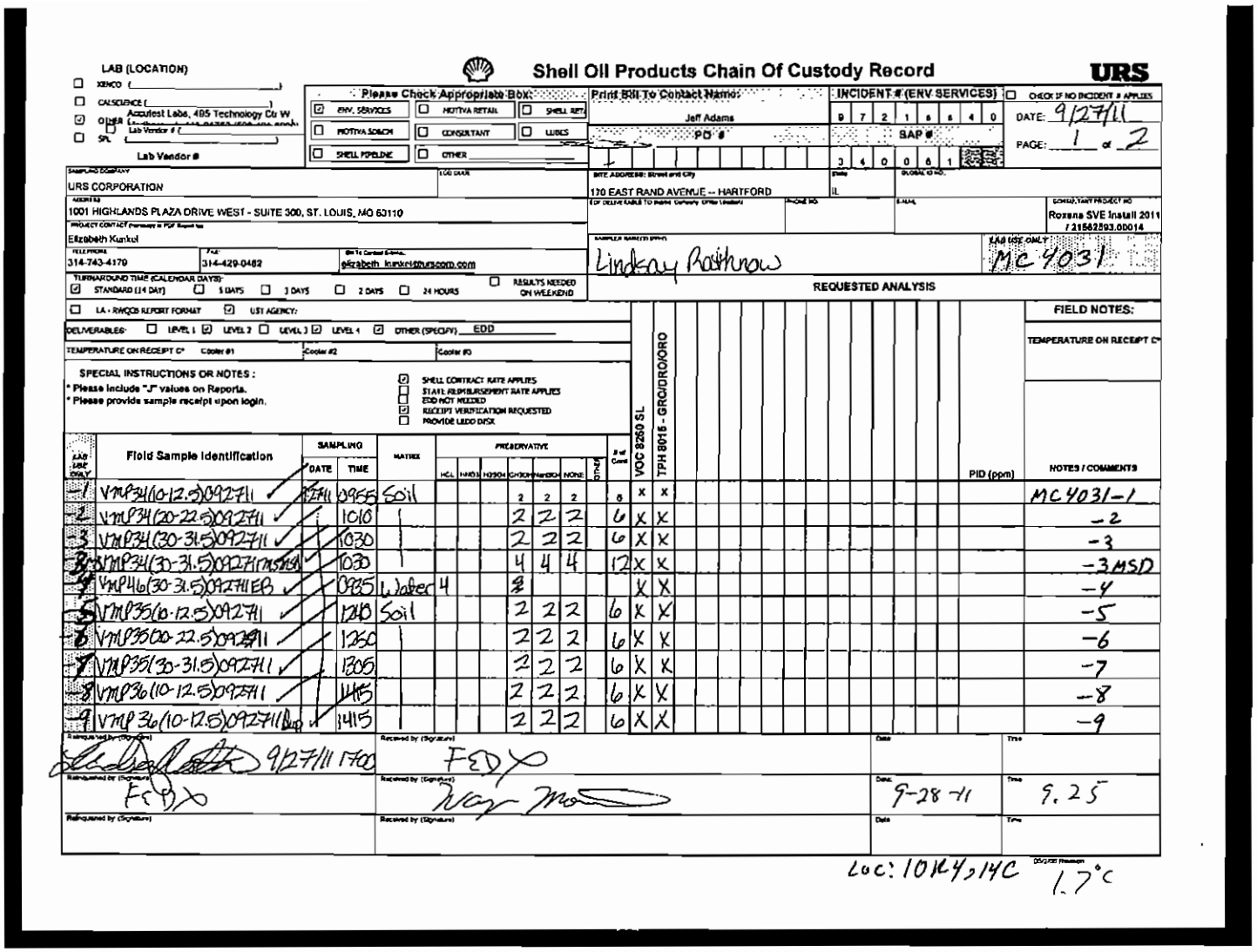
# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

# Shell Oil Products Chain Of Custody Record

URS



LAB (LOCATION)
- ☐ XENCO ( )
- ☐ CALSCIENCE ( )
- ☑ OTHER Accutest Labs, 495 Technology Ctr W
- ☐ SPL ( ) Lab Vendor # ( )

Lab Vendor #

Please Check Appropriate Box: ☑ ENV. SERVICES ☐ MOTIVA RETAIL ☐ SHELL RET. ☐ MOTIVA SOUCH ☐ CONSULTANT ☐ LUBES ☐ SHELL PIPELINE ☐ OTHER

Print Bill To Contact Name: Jeff Adams

PO #

INCIDENT # (ENV SERVICES): 9 7 2 1 5 5 4 0

SAP #: 3 4 0 0 6 1

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 9/27/11

PAGE: 1 of 2

SAMPLING COMPANY: URS CORPORATION

LOG CODE:

SITE ADDRESS: Street and City: 170 EAST RAND AVENUE -- HARTFORD

State: IL

GLOBAL ID NO.:

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110

EDF DELIVERABLE TO (Name, Company, Office Location):

PHONE NO.:

E-MAIL:

COMPLIANT PROJECT NO.: Roxana SVE Install 2011 / 21562593.00014

PROJECT CONTACT (Hardcopy or PDF Report to): Elizabeth Kunkel

TELEPHONE: 314-743-4179

FAX: 314-429-0462

BILL TO Contact E-mail: elizabeth.kunkel@urscorp.com

SAMPLER NAME(S) (PRINT): Lindsay Rathnow

LAB USE ONLY: MC 4031

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY:

DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C°: Cooler #1 Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
- * Please include "J" values on Reports.
- * Please provide sample receipt upon login.

☑ SHELL CONTRACT RATE APPLIES
☐ STATE REIMBURSEMENT RATE APPLIES
☐ EDD NOT NEEDED
☑ RECEIPT VERIFICATION REQUESTED
☐ PROVIDE LEDD DISK

REQUESTED ANALYSIS

FIELD NOTES:

TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE HCL | HNO3 | H2SO4 | CHOH | NaHSO4 | NONE | OTHER | # of Cont. | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | VMP34(10-12.5)092711 | 9/27/11 | 0955 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | MC4031-1 |
| -2 | VMP34(20-22.5)092711 | | 1010 | | | | | 2 | 2 | 2 | | 6 | X | X | | -2 |
| -3 | VMP34(30-31.5)092711 | | 1030 | | | | | 2 | 2 | 2 | | 6 | X | X | | -3 |
| -3MSD | VMP34(30-31.5)092711MSMSD | | 1030 | | | | | 4 | 4 | 4 | | 12 | X | X | | -3MSD |
| -4 | VMP46(30-31.5)092711EB | | 0935 | Water | 4 | | | 2 | | | | | X | X | | -4 |
| -5 | VMP35(10-12.5)092711 | | 1240 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | -5 |
| -6 | VMP35(20-22.5)092711 | | 1250 | | | | | 2 | 2 | 2 | | 6 | X | X | | -6 |
| -7 | VMP35(30-31.5)092711 | | 1305 | | | | | 2 | 2 | 2 | | 6 | X | X | | -7 |
| -8 | VMP36(10-12.5)092711 | | 1415 | | | | | 2 | 2 | 2 | | 6 | X | X | | -8 |
| -9 | VMP36(10-12.5)092711Dup | | 1415 | | | | | 2 | 2 | 2 | | 6 | X | X | | -9 |

| Relinquished by (Signature) | Received by (Signature) | Date | Time |
|---|---|---|---|
| [signature] 9/27/11 1700 | FEDX | | |
| FEDX | [signature] | 9-28-11 | 9.25 |
| | | | |

Loc: 10K4, 14C

05/2/08 Revision 1.7°C

**MC4031: Chain of Custody**
**Page 1 of 3**

LAB (LOCATION)

- ☐ XENCO ( )
- ☐ CALSCIENCE ( )
- ☑ OTHER Accutest Labs; 495 Technology Ctr W
- ☐ SPL Lab Vendor # ( )

Lab Vendor #

# Shell Oil Products Chain Of Custody Record

URS

Please Check Appropriate Box:

- ☑ ENV. SERVICES
- ☐ MOTIVA RETAIL
- ☐ SHELL RETAIL
- ☐ MOTIVA SEACH
- ☐ CONSULTANT
- ☐ LUBES
- ☐ SHELL PIPELINE
- ☐ OTHER

Print Bill To Contact Name: Jeff Adams

P.O #

INCIDENT # (ENV SERVICES): 9 7 2 1 6 6 4 0

SAP #: 3 4 0 0 6 1

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 9/27/11

PAGE: 2 of 2

SAMPLING COMPANY: URS CORPORATION

NCO CODE:

BILL ADDRESS: Street and City: 170 EAST RAND AVENUE – HARTFORD

State: IL

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300; ST. LOUIS, MO 63110

PROJECT CONTACT: Elizabeth Kunkel

TELEPHONE: 314-743-4179

FAX: 314-429-0462

Bill To Contact E-MAIL: elizabeth_kunkel@urscorp.com

SAMPLER NAME(S) (Print): Lindsay Rathrow

CONSULTANT PROJECT NO: Roxana SVE Install 2011 / 21562593.00014

LAB USE ONLY

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

REQUESTED ANALYSIS

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY.

DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C°: Cooler #1 | Cooler #2 | Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
* Please include "J" values on Reports.
* Please provide sample receipt upon login.

- ☑ SHELL CONTRACT RATE APPLIES
- ☐ STATE REIMBURSEMENT RATE APPLIES
- ☐ EDD NOT NEEDED
- ☑ RECEIPT VERIFICATION REQUESTED
- ☐ PROVIDE LEDD DISK

FIELD NOTES:

TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | HCL | HNO3 | H2SO4 | CHOCL | NaHSO4 | NONE | Sm | # of Cont | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -10 | VMP36(20-22.5)092711 ✓ | 9/27/11 | 1425 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | MC 4031-10 |
| -11 | VMP36(30-31.5)092711 ✓ | 9/27/11 | 1435 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | -11 |
| -12 | TB092711-1 ✓ | \| | | Water | 2 | | | | | | | | X | X | | -12 |
| -13 | TB092711-2 ✓ | \| | | Water | 2 | | | | | | | | X | X | | -13 |

| Relinquished by (Signature) | Received by (Signature) | Date | Time |
|---|---|---|---|
| [signature] 9/27/11 1700 | FEDX | 9-28-11 | 925 |
| FEDX | [signature] | | |
| | | | |

05/2/08 Revision

1.7°C

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MC4031: Chain of Custody
Page 2 of 3

ACCUTEST LABORATORIES

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC4031 Client: SHELL Immediate Client Services Action Required: No

Date / Time Received: 9/28/2011 Delivery Method: Client Service Action Required at Login: No

Project: 340061 No. Coolers: 1 Airbill #'s:

| Cooler Security | Y | or | N | | Y | or | N |
|---|---|---|---|---|---|---|---|
| 1. Custody Seals Present: | ☑ | | ☐ | 3. COC Present: | ☑ | | ☐ |
| 2. Custody Seals Intact: | ☑ | | ☐ | 4. Smpl Dates/Time OK | ☑ | | ☐ |

| Cooler Temperature | Y | or | N |
|---|---|---|---|
| 1. Temp criteria achieved: | ☑ | | ☐ |
| 2. Cooler temp verification: | Infared gun | | |
| 3. Cooler media: | Ice (bag) | | |

| Quality Control Preservatio | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Trip Blank present / cooler: | ☐ | | ☐ | ☑ |
| 2. Trip Blank listed on COC: | ☐ | | ☐ | ☑ |
| 3. Samples preserved properly: | ☑ | | ☐ | |
| 4. VOCs headspace free: | ☐ | | ☐ | ☑ |

| Sample Integrity - Documentation | Y | or | N |
|---|---|---|---|
| 1. Sample labels present on bottles: | ☑ | | ☐ |
| 2. Container labeling complete: | ☑ | | ☐ |
| 3. Sample container label / COC agree: | ☑ | | ☐ |

| Sample Integrity - Condition | Y | or | N |
|---|---|---|---|
| 1. Sample recvd within HT: | ☑ | | ☐ |
| 2. All containers accounted for: | ☑ | | ☐ |
| 3. Condition of sample: | Intact | | |

| Sample Integrity - Instructions | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Analysis requested is clear: | ☑ | | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | | ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ | | ☐ | |
| 4. Compositing instructions clear: | ☐ | | ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ | | ☐ | ☑ |

Comments

Accutest Laboratories
V.508.481.6200

495 Technology Center West, Bldg One
F 508.481.7753

Marlborough, MA
www.accutest.com

**MC4031: Chain of Custody**
**Page 3 of 3**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC4031

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC4031-1 | Collected: 27-SEP-11 09:55 By: LR | | Received: 28-SEP-11 By: SAP | | | |
| VMP34 (10-12.5)092711 | | | | | | |
| MC4031-1 | SM21 2540 B MOD. | 30-SEP-11 | HS | | | %SOL |
| MC4031-1 | SW846 8260B | 06-OCT-11 16:57 | AMY | | | V8260SL |
| MC4031-1 | SW846 8015 | 06-OCT-11 21:24 | WS | | | V8015GRO |
| MC4031-1 | SW846-8015 | 10-OCT-11 22:44 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC4031-2 | Collected: 27-SEP-11 10:10 By: LR | | Received: 28-SEP-11 By: SAP | | | |
| VMP34 (20-22.5)092711 | | | | | | |
| MC4031-2 | SM21 2540 B MOD. | 30-SEP-11 | HS | | | %SOL |
| MC4031-2 | SW846 8260B | 06-OCT-11 17:25 | AMY | | | V8260SL |
| MC4031-2 | SW846 8015 | 06-OCT-11 22:03 | WS | | | V8015GRO |
| MC4031-2 | SW846 8260B | 07-OCT-11 15:42 | AMY | | | V8260SL |
| MC4031-2 | SW846-8015 | 10-OCT-11 21:02 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC4031-3 | Collected: 27-SEP-11 10:30 By: LR | | Received: 28-SEP-11 By: SAP | | | |
| VMP34 (30-31.5)092711 | | | | | | |
| MC4031-3 | SM21 2540 B MOD. | 30-SEP-11 | HS | | | %SOL |
| MC4031-3 | SW846 8260B | 07-OCT-11 11:58 | AMY | | | V8260SL |
| MC4031-3 | SW846 8015 | 08-OCT-11 21:53 | AF | | | V8015GRO |
| MC4031-3 | SW846-8015 | 11-OCT-11 00:30 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC4031-4 | Collected: 27-SEP-11 09:35 By: LR | | Received: 28-SEP-11 By: SAP | | | |
| VMP46 (30-31.5)092711 EB | | | | | | |
| MC4031-4 | SW846 8015 | 10-OCT-11 12:42 | WS | | | V8015GRO |
| MC4031-4 | SW846 8260B | 10-OCT-11 22:52 | DFT | | | V8260SL |
| MC4031-4 | SW846-8015 | 11-OCT-11 21:37 | KD | 04-OCT-11 | AJ | B8015DROORO |
| MC4031-5 | Collected: 27-SEP-11 12:40 By: LR | | Received: 28-SEP-11 By: SAP | | | |
| VMP35 (10-12.5)092711 | | | | | | |
| MC4031-5 | SM21 2540 B MOD. | 30-SEP-11 | HS | | | %SOL |
| MC4031-5 | SW846 8015 | 09-OCT-11 00:33 | AF | | | V8015GRO |
| MC4031-5 | SW846 8260B | 09-OCT-11 18:24 | GK | | | V8260SL |
| MC4031-5 | SW846-8015 | 11-OCT-11 02:21 | KD | 08-OCT-11 | MS | B8015DROORO |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC4031

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC4031-6 Collected: 27-SEP-11 12:50 By: LR | | | Received: 28-SEP-11 By: SAP | | | |
| VMP35 (20-22.5)092711 | | | | | | |
| MC4031-6 | SM21 2540 B MOD. | 30-SEP-11 | HS | | | %SOL |
| MC4031-6 | SW846 8260B | 06-OCT-11 17:53 | AMY | | | V8260SL |
| MC4031-6 | SW846 8015 | 09-OCT-11 01:12 | AF | | | V8015GRO |
| MC4031-6 | SW846-8015 | 11-OCT-11 03:15 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC4031-7 Collected: 27-SEP-11 13:05 By: LR | | | Received: 28-SEP-11 By: SAP | | | |
| VMP35 (30-31.5)092711 | | | | | | |
| MC4031-7 | SM21 2540 B MOD. | 30-SEP-11 | HS | | | %SOL |
| MC4031-7 | SW846 8015 | 09-OCT-11 01:52 | AF | | | V8015GRO |
| MC4031-7 | SW846 8260B | 09-OCT-11 17:56 | GK | | | V8260SL |
| MC4031-7 | SW846-8015 | 11-OCT-11 01:25 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC4031-8 Collected: 27-SEP-11 14:15 By: LR | | | Received: 28-SEP-11 By: SAP | | | |
| VMP36 (10-12.5)092711 | | | | | | |
| MC4031-8 | SM21 2540 B MOD. | 30-SEP-11 | HS | | | %SOL |
| MC4031-8 | SW846 8015 | 08-OCT-11 23:53 | AF | | | V8015GRO |
| MC4031-8 | SW846 8260B | 09-OCT-11 18:51 | GK | | | V8260SL |
| MC4031-8 | SW846-8015 | 11-OCT-11 07:00 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC4031-8 | SW846-8015 | 11-OCT-11 11:43 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC4031-9 Collected: 27-SEP-11 14:15 By: LR | | | Received: 28-SEP-11 By: SAP | | | |
| VMP36 (10-12.5)092711 DUP | | | | | | |
| MC4031-9 | SM21 2540 B MOD. | 30-SEP-11 | HS | | | %SOL |
| MC4031-9 | SW846 8015 | 09-OCT-11 02:32 | AF | | | V8015GRO |
| MC4031-9 | SW846 8260B | 09-OCT-11 19:19 | GK | | | V8260SL |
| MC4031-9 | SW846-8015 | 11-OCT-11 07:56 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC4031-9 | SW846-8015 | 11-OCT-11 11:43 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC4031-10 Collected: 27-SEP-11 14:25 By: LR | | | Received: 28-SEP-11 By: SAP | | | |
| VMP36 (20-22.5)092711 | | | | | | |
| MC4031-10 | SM21 2540 B MOD. | 30-SEP-11 | HS | | | %SOL |
| MC4031-10 | SW846 8015 | 08-OCT-11 22:33 | AF | | | V8015GRO |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC4031

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC4031-10 | SW846 8260B | 09-OCT-11 19:47 | GK | | | V8260SL |
| MC4031-10 | SW846-8015 | 11-OCT-11 03:15 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC4031-11 | Collected: 27-SEP-11 14:35 By: LR | | Received: 28-SEP-11 By: SAP | | | |
| VMP36 (30-31.5)092711 | | | | | | |
| MC4031-11 | SM21 2540 B MOD. | 30-SEP-11 | HS | | | %SOL |
| MC4031-11 | SW846 8260B | 06-OCT-11 18:21 | AMY | | | V8260SL |
| MC4031-11 | SW846 8015 | 09-OCT-11 03:12 | AF | | | V8015GRO |
| MC4031-11 | SW846-8015 | 10-OCT-11 20:10 | KD | 08-OCT-11 | MS | B8015DROORO |
| MC4031-12 | Collected: 27-SEP-11 00:00 By: LR | | Received: 28-SEP-11 By: SAP | | | |
| TB092711-1 | | | | | | |
| MC4031-12 | SW846 8260B | 10-OCT-11 17:15 | DFT | | | V8260SL |
| MC4031-13 | Collected: 27-SEP-11 00:00 By: LR | | Received: 28-SEP-11 By: SAP | | | |
| TB092711-2 | | | | | | |
| MC4031-13 | SW846 8260B | 10-OCT-11 23:20 | DFT | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/28/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC4031-1.1 | VOC Ref #10 | Gary Krasinski | 10/04/11 14:08 | Retrieve from Storage |
| MC4031-1.1 | Gary Krasinski | VOC Ref #10 | 10/05/11 10:35 | Return to Storage |
| MC4031-1.1 | VOC Ref #10 | William Shao | 10/06/11 11:21 | Retrieve from Storage |
| MC4031-1.1 | William Shao | GCBH | 10/06/11 11:21 | Load on Instrument |
| MC4031-1.1 | GCBH | William Shao | 10/06/11 11:22 | Unload from Instrument |
| MC4031-1.1 | William Shao | VOC Ref #10 | 10/06/11 11:22 | Return to Storage |
| MC4031-1.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-1.3 | VOC Ref #10 | Amy Min Yang | 10/06/11 13:03 | Retrieve from Storage |
| MC4031-1.3 | Amy Min Yang | GCMSP | 10/06/11 13:03 | Load on Instrument |
| MC4031-1.3 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC4031-1.3 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC4031-1.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-1.5 | Walk In Ref #9 | Hamid Siamak | 09/30/11 09:46 | Retrieve from Storage |
| MC4031-1.5 | Hamid Siamak | Walk In Ref #9 | 09/30/11 12:10 | Return to Storage |
| MC4031-1.5 | Walk In Ref #9 | Amirhossein Farvardin | 10/08/11 12:35 | Retrieve from Storage |
| MC4031-1.5 | Amirhossein Farvardin | Walk In Ref #9 | 10/08/11 19:12 | Return to Storage |
| MC4031-1.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-2.1 | VOC Ref #10 | Gary Krasinski | 10/04/11 14:08 | Retrieve from Storage |
| MC4031-2.1 | Gary Krasinski | VOC Ref #10 | 10/05/11 10:35 | Return to Storage |
| MC4031-2.1 | VOC Ref #10 | William Shao | 10/06/11 11:21 | Retrieve from Storage |
| MC4031-2.1 | William Shao | GCBH | 10/06/11 11:21 | Load on Instrument |
| MC4031-2.1 | GCBH | William Shao | 10/06/11 11:22 | Unload from Instrument |
| MC4031-2.1 | William Shao | VOC Ref #10 | 10/06/11 11:22 | Return to Storage |
| MC4031-2.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-2.3 | VOC Ref #10 | Amy Min Yang | 10/07/11 14:39 | Retrieve from Storage |
| MC4031-2.3 | Amy Min Yang | GCMSV | 10/07/11 14:39 | Load on Instrument |
| MC4031-2.3 | GCMSV | Amy Min Yang | 10/11/11 08:34 | Unload from Instrument |
| MC4031-2.3 | Amy Min Yang | Freezer #6 | 10/11/11 08:34 | Return to Storage |
| MC4031-2.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-2.4 | VOC Ref #10 | Amy Min Yang | 10/06/11 13:03 | Retrieve from Storage |
| MC4031-2.4 | Amy Min Yang | GCMSP | 10/06/11 13:03 | Load on Instrument |
| MC4031-2.4 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC4031-2.4 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC4031-2.4 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-2.5 | Walk In Ref #9 | Hamid Siamak | 09/30/11 09:46 | Retrieve from Storage |
| MC4031-2.5 | Hamid Siamak | Walk In Ref #9 | 09/30/11 12:10 | Return to Storage |
| MC4031-2.5 | Walk In Ref #9 | Amirhossein Farvardin | 10/08/11 12:35 | Retrieve from Storage |
| MC4031-2.5 | Amirhossein Farvardin | Walk In Ref #9 | 10/08/11 19:12 | Return to Storage |

# Accutest Internal Chain of Custody



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/28/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC4031-2.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-3.2 | VOC Ref #10 | Gary Krasinski | 10/04/11 14:08 | Retrieve from Storage |
| MC4031-3.2 | Gary Krasinski | VOC Ref #10 | 10/05/11 10:35 | Return to Storage |
| MC4031-3.2 | VOC Ref #10 | William Shao | 10/06/11 11:39 | Retrieve from Storage |
| MC4031-3.2 | William Shao | GCBH | 10/06/11 11:39 | Load on Instrument |
| MC4031-3.2 | GCBH | Anthony Franciosa | 10/08/11 09:53 | Unload from Instrument |
| MC4031-3.2 | Anthony Franciosa | VOC Ref #10 | 10/08/11 09:54 | Return to Storage |
| MC4031-3.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-3.5 | Walk In Ref #9 | Hamid Siamak | 09/30/11 09:46 | Retrieve from Storage |
| MC4031-3.5 | Hamid Siamak | Walk In Ref #9 | 09/30/11 12:10 | Return to Storage |
| MC4031-3.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-3.8 | VOC Ref #10 | Amy Min Yang | 10/07/11 10:46 | Retrieve from Storage |
| MC4031-3.8 | Amy Min Yang | GCMSP | 10/07/11 10:47 | Load on Instrument |
| MC4031-3.8 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC4031-3.8 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC4031-3.8 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-3.12 | VOC Ref #10 | Anthony Franciosa | 10/08/11 11:45 | Retrieve from Storage |
| MC4031-3.12 | Anthony Franciosa | GCBH | 10/08/11 11:45 | Load on Instrument |
| MC4031-3.12 | GCBH | Anthony Franciosa | 10/09/11 09:13 | Unload from Instrument |
| MC4031-3.12 | Anthony Franciosa | VOC Ref #10 | 10/09/11 09:13 | Return to Storage |
| MC4031-3.12 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-3.13 | VOC Ref #10 | Amy Min Yang | 10/07/11 10:46 | Retrieve from Storage |
| MC4031-3.13 | Amy Min Yang | GCMSP | 10/07/11 10:47 | Load on Instrument |
| MC4031-3.13 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC4031-3.13 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC4031-3.13 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-3.14 | VOC Ref #10 | Amy Min Yang | 10/07/11 10:46 | Retrieve from Storage |
| MC4031-3.14 | Amy Min Yang | GCMSP | 10/07/11 10:47 | Load on Instrument |
| MC4031-3.14 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC4031-3.14 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC4031-3.14 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-4.1 | VOC Ref #2 | Dana Tyron | 10/10/11 16:30 | Retrieve from Storage |
| MC4031-4.1 | Dana Tyron | GCMSN | 10/10/11 16:30 | Load on Instrument |
| MC4031-4.1 | GCMSN | Dana Tyron | 10/11/11 14:19 | Unload from Instrument |
| MC4031-4.1 | Dana Tyron | VOC Ref #2 | 10/11/11 14:20 | Return to Storage |
| MC4031-4.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |

# Accutest Internal Chain of Custody

Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/28/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC4031-4.2 | VOC Ref #2 | William Shao | 10/10/11 10:40 | Retrieve from Storage |
| MC4031-4.2 | William Shao | GCBH | 10/10/11 10:40 | Load on Instrument |
| MC4031-4.2 | GCBH | William Shao | 10/10/11 10:40 | Unload from Instrument |
| MC4031-4.2 | William Shao | VOC Ref #2 | 10/10/11 10:40 | Return to Storage |
| MC4031-4.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-4.4 | Walk In Ref #22 | Amirhossein Farvardin | 10/04/11 09:01 | Retrieve from Storage |
| MC4031-4.4 | Amirhossein Farvardin | | 10/04/11 17:11 | Depleted |
| MC4031-4.9 | VOC Ref #2 | William Shao | 10/10/11 10:40 | Retrieve from Storage |
| MC4031-4.9 | William Shao | GCBH | 10/10/11 10:40 | Load on Instrument |
| MC4031-4.9 | GCBH | William Shao | 10/10/11 10:40 | Unload from Instrument |
| MC4031-4.9 | William Shao | VOC Ref #2 | 10/10/11 10:40 | Return to Storage |
| MC4031-4.9 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-5.1 | VOC Ref #10 | Gary Krasinski | 10/04/11 14:28 | Retrieve from Storage |
| MC4031-5.1 | Gary Krasinski | VOC Ref #10 | 10/10/11 10:02 | Return to Storage |
| MC4031-5.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-5.2 | VOC Ref #10 | William Shao | 10/06/11 11:39 | Retrieve from Storage |
| MC4031-5.2 | William Shao | GCBH | 10/06/11 11:39 | Load on Instrument |
| MC4031-5.2 | GCBH | Anthony Franciosa | 10/08/11 09:53 | Unload from Instrument |
| MC4031-5.2 | Anthony Franciosa | VOC Ref #10 | 10/08/11 09:54 | Return to Storage |
| MC4031-5.2 | VOC Ref #10 | Anthony Franciosa | 10/08/11 11:45 | Retrieve from Storage |
| MC4031-5.2 | Anthony Franciosa | GCBH | 10/08/11 11:45 | Load on Instrument |
| MC4031-5.2 | GCBH | Anthony Franciosa | 10/09/11 09:13 | Unload from Instrument |
| MC4031-5.2 | Anthony Franciosa | VOC Ref #10 | 10/09/11 09:13 | Return to Storage |
| MC4031-5.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-5.5 | Walk In Ref #9 | Hamid Siamak | 09/30/11 09:46 | Retrieve from Storage |
| MC4031-5.5 | Hamid Siamak | Walk In Ref #9 | 09/30/11 12:10 | Return to Storage |
| MC4031-5.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-6.1 | VOC Ref #10 | Gary Krasinski | 10/04/11 14:08 | Retrieve from Storage |
| MC4031-6.1 | Gary Krasinski | VOC Ref #10 | 10/05/11 10:35 | Return to Storage |
| MC4031-6.1 | VOC Ref #10 | William Shao | 10/06/11 11:39 | Retrieve from Storage |
| MC4031-6.1 | William Shao | GCBH | 10/06/11 11:39 | Load on Instrument |
| MC4031-6.1 | GCBH | Anthony Franciosa | 10/08/11 09:53 | Unload from Instrument |
| MC4031-6.1 | Anthony Franciosa | VOC Ref #10 | 10/08/11 09:54 | Return to Storage |
| MC4031-6.1 | VOC Ref #10 | Anthony Franciosa | 10/08/11 11:45 | Retrieve from Storage |
| MC4031-6.1 | Anthony Franciosa | GCBH | 10/08/11 11:45 | Load on Instrument |
| MC4031-6.1 | GCBH | Anthony Franciosa | 10/09/11 09:13 | Unload from Instrument |
| MC4031-6.1 | Anthony Franciosa | VOC Ref #10 | 10/09/11 09:13 | Return to Storage |
| MC4031-6.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |

# Accutest Internal Chain of Custody



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/28/11

| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC4031-6.4 | VOC Ref #10 | Amy Min Yang | 10/06/11 13:03 | Retrieve from Storage |
| MC4031-6.4 | Amy Min Yang | GCMSP | 10/06/11 13:03 | Load on Instrument |
| MC4031-6.4 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC4031-6.4 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC4031-6.4 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-6.5 | Walk In Ref #9 | Hamid Siamak | 09/30/11 09:46 | Retrieve from Storage |
| MC4031-6.5 | Hamid Siamak | Walk In Ref #9 | 09/30/11 12:10 | Return to Storage |
| MC4031-6.5 | Walk In Ref #9 | Amirhossein Farvardin | 10/08/11 12:35 | Retrieve from Storage |
| MC4031-6.5 | Amirhossein Farvardin | Walk In Ref #9 | 10/08/11 19:12 | Return to Storage |
| MC4031-6.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-7.1 | VOC Ref #10 | William Shao | 10/06/11 11:39 | Retrieve from Storage |
| MC4031-7.1 | William Shao | GCBH | 10/06/11 11:39 | Load on Instrument |
| MC4031-7.1 | GCBH | Anthony Franciosa | 10/08/11 09:53 | Unload from Instrument |
| MC4031-7.1 | Anthony Franciosa | VOC Ref #10 | 10/08/11 09:54 | Return to Storage |
| MC4031-7.1 | VOC Ref #10 | Anthony Franciosa | 10/08/11 11:45 | Retrieve from Storage |
| MC4031-7.1 | Anthony Franciosa | GCBH | 10/08/11 11:45 | Load on Instrument |
| MC4031-7.1 | GCBH | Anthony Franciosa | 10/09/11 09:13 | Unload from Instrument |
| MC4031-7.1 | Anthony Franciosa | VOC Ref #10 | 10/09/11 09:13 | Return to Storage |
| MC4031-7.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-7.2 | VOC Ref #10 | Gary Krasinski | 10/04/11 14:08 | Retrieve from Storage |
| MC4031-7.2 | Gary Krasinski | VOC Ref #10 | 10/10/11 10:02 | Return to Storage |
| MC4031-7.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-7.5 | Walk In Ref #9 | Hamid Siamak | 09/30/11 09:46 | Retrieve from Storage |
| MC4031-7.5 | Hamid Siamak | Walk In Ref #9 | 09/30/11 12:10 | Return to Storage |
| MC4031-7.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-7.6 | Walk In Ref #9 | Amirhossein Farvardin | 10/08/11 12:35 | Retrieve from Storage |
| MC4031-7.6 | Amirhossein Farvardin | Walk In Ref #9 | 10/08/11 19:12 | Return to Storage |
| MC4031-7.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-8.1 | VOC Ref #10 | Anthony Franciosa | 10/08/11 11:45 | Retrieve from Storage |
| MC4031-8.1 | Anthony Franciosa | GCBH | 10/08/11 11:45 | Load on Instrument |
| MC4031-8.1 | GCBH | Anthony Franciosa | 10/09/11 09:13 | Unload from Instrument |
| MC4031-8.1 | Anthony Franciosa | VOC Ref #10 | 10/09/11 09:13 | Return to Storage |
| MC4031-8.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-8.2 | VOC Ref #10 | Gary Krasinski | 10/04/11 14:08 | Retrieve from Storage |
| MC4031-8.2 | Gary Krasinski | VOC Ref #10 | 10/10/11 10:02 | Return to Storage |
| MC4031-8.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |

# Accutest Internal Chain of Custody

Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/28/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC4031-8.6 | Walk In Ref #9 | Hamid Siamak | 09/30/11 09:46 | Retrieve from Storage |
| MC4031-8.6 | Hamid Siamak | Walk In Ref #9 | 09/30/11 12:10 | Return to Storage |
| MC4031-8.6 | Walk In Ref #9 | Amirhossein Farvardin | 10/08/11 12:35 | Retrieve from Storage |
| MC4031-8.6 | Amirhossein Farvardin | Walk In Ref #9 | 10/08/11 19:12 | Return to Storage |
| MC4031-8.6 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-9.1 | VOC Ref #10 | Anthony Franciosa | 10/08/11 11:45 | Retrieve from Storage |
| MC4031-9.1 | Anthony Franciosa | GCBH | 10/08/11 11:45 | Load on Instrument |
| MC4031-9.1 | GCBH | Anthony Franciosa | 10/09/11 09:13 | Unload from Instrument |
| MC4031-9.1 | Anthony Franciosa | VOC Ref #10 | 10/09/11 09:13 | Return to Storage |
| MC4031-9.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-9.2 | VOC Ref #10 | Gary Krasinski | 10/04/11 14:08 | Retrieve from Storage |
| MC4031-9.2 | Gary Krasinski | VOC Ref #10 | 10/10/11 10:02 | Return to Storage |
| MC4031-9.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-9.5 | Walk In Ref #9 | Hamid Siamak | 09/30/11 09:46 | Retrieve from Storage |
| MC4031-9.5 | Hamid Siamak | Walk In Ref #9 | 09/30/11 12:10 | Return to Storage |
| MC4031-9.5 | Walk In Ref #9 | Amirhossein Farvardin | 10/08/11 12:35 | Retrieve from Storage |
| MC4031-9.5 | Amirhossein Farvardin | Walk In Ref #9 | 10/08/11 19:12 | Return to Storage |
| MC4031-9.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-10.1 | VOC Ref #10 | Anthony Franciosa | 10/08/11 11:45 | Retrieve from Storage |
| MC4031-10.1 | Anthony Franciosa | GCBH | 10/08/11 11:45 | Load on Instrument |
| MC4031-10.1 | GCBH | Anthony Franciosa | 10/09/11 09:13 | Unload from Instrument |
| MC4031-10.1 | Anthony Franciosa | VOC Ref #10 | 10/09/11 09:13 | Return to Storage |
| MC4031-10.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-10.2 | VOC Ref #10 | Gary Krasinski | 10/04/11 14:08 | Retrieve from Storage |
| MC4031-10.2 | Gary Krasinski | VOC Ref #10 | 10/10/11 10:02 | Return to Storage |
| MC4031-10.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-10.5 | Walk In Ref #9 | Hamid Siamak | 09/30/11 09:46 | Retrieve from Storage |
| MC4031-10.5 | Hamid Siamak | Walk In Ref #9 | 09/30/11 12:10 | Return to Storage |
| MC4031-10.5 | Walk In Ref #9 | Amirhossein Farvardin | 10/08/11 12:35 | Retrieve from Storage |
| MC4031-10.5 | Amirhossein Farvardin | Walk In Ref #9 | 10/08/11 19:12 | Return to Storage |
| MC4031-10.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-11.1 | VOC Ref #10 | Anthony Franciosa | 10/08/11 11:45 | Retrieve from Storage |
| MC4031-11.1 | Anthony Franciosa | GCBH | 10/08/11 11:45 | Load on Instrument |
| MC4031-11.1 | GCBH | Anthony Franciosa | 10/09/11 09:13 | Unload from Instrument |
| MC4031-11.1 | Anthony Franciosa | VOC Ref #10 | 10/09/11 09:13 | Return to Storage |
| MC4031-11.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |

# Accutest Internal Chain of Custody

Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 09/28/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC4031-11.2 | VOC Ref #10 | Gary Krasinski | 10/04/11 14:08 | Retrieve from Storage |
| MC4031-11.2 | Gary Krasinski | VOC Ref #10 | 10/06/11 09:42 | Return to Storage |
| MC4031-11.2 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-11.3 | VOC Ref #10 | Amy Min Yang | 10/06/11 13:03 | Retrieve from Storage |
| MC4031-11.3 | Amy Min Yang | GCMSP | 10/06/11 13:03 | Load on Instrument |
| MC4031-11.3 | GCMSP | Amy Min Yang | 10/11/11 12:06 | Unload from Instrument |
| MC4031-11.3 | Amy Min Yang | VOC Ref #10 | 10/11/11 12:06 | Return to Storage |
| MC4031-11.3 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-11.5 | Walk In Ref #9 | Hamid Siamak | 09/30/11 09:46 | Retrieve from Storage |
| MC4031-11.5 | Hamid Siamak | Walk In Ref #9 | 09/30/11 12:10 | Return to Storage |
| MC4031-11.5 | Walk In Ref #9 | Amirhossein Farvardin | 10/08/11 12:35 | Retrieve from Storage |
| MC4031-11.5 | Amirhossein Farvardin | Walk In Ref #9 | 10/08/11 19:12 | Return to Storage |
| MC4031-11.5 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-12.1 | VOC Ref #2 | Dana Tyron | 10/10/11 13:06 | Retrieve from Storage |
| MC4031-12.1 | Dana Tyron | GCMSN | 10/10/11 13:06 | Load on Instrument |
| MC4031-12.1 | GCMSN | Dana Tyron | 10/11/11 14:19 | Unload from Instrument |
| MC4031-12.1 | Dana Tyron | VOC Ref #2 | 10/11/11 14:20 | Return to Storage |
| MC4031-12.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |
| MC4031-13.1 | VOC Ref #2 | Dana Tyron | 10/10/11 16:30 | Retrieve from Storage |
| MC4031-13.1 | Dana Tyron | GCMSN | 10/10/11 16:30 | Load on Instrument |
| MC4031-13.1 | GCMSN | Dana Tyron | 10/11/11 14:19 | Unload from Instrument |
| MC4031-13.1 | Dana Tyron | VOC Ref #2 | 10/11/11 14:20 | Return to Storage |
| MC4031-13.1 | Scott Parsick | | 11/23/11 13:06 | Disposed |

New England ACCUTEST LABORATORIES



## GC/MS Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-MB | P55474.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-1, MC4031-2, MC4031-6, MC4031-11

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-MB | P55474.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-1, MC4031-2, MC4031-6, MC4031-11

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-MB | P55474.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-1, MC4031-2, MC4031-6, MC4031-11

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 83% | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 111% | 70-130% |

# Method Blank Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1817-MB | P55500.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 1.2 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1817-MB | P55500.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1817-MB | P55500.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-3

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 81% | 70-130% |
| 2037-26-5 | Toluene-D8 | 100% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | 70-130% |

# Method Blank Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1848-MB | K553I8.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-5, MC4031-7, MC4031-8, MC4031-9, MC4031-10

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 58 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 850 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 250 | 100 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 6.3 | ug/kg | |
| 108-86-1 | Bromohenzene | ND | 250 | 9.5 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 52 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 10 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 24 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 34 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 59 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 63 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 8.3 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 33 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 48 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 11 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 4.7 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 13 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 250 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 7.4 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 11 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 7.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 56 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 250 | 250 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 33 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 100 | 9.6 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 7.5 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 7.2 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 7.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 17 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 7.6 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 7.3 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 16 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 13 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 11 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 58 | ug/kg | |

# Method Blank Summary

Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1848-MB | K55318.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-5, MC4031-7, MC4031-8, MC4031-9, MC4031-10

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 9.2 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 9.6 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 50 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 34 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 160 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 6.5 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 250 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 52 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 7.9 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.1 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 31 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 42 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 15 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 18 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 250 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 8.1 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 25 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 8.8 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 8.4 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 9.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 55 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 250 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 9.2 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 13 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 9.8 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 46 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 10 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 7.9 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 9.1 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 59 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 32 | ug/kg | |
| | m,p-Xylene | ND | 100 | 13 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 9.2 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 6.3 | ug/kg | |

# Method Blank Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1848-MB | K55318.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-5, MC4031-7, MC4031-8, MC4031-9, MC4031-10

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 104% | 70-130% |
| 2037-26-5 | Toluene-D8 | 103% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 107% | 70-130% |

# Method Blank Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Bateh | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2098-MB | N55926.D | 1 | 10/10/11 | DFT | n/a | n/a | MSN2098 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-4, MC4031-12, MC4031-13

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |

# Method Blank Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2098-MB | N55926.D | 1 | 10/10/11 | DFT | n/a | n/a | MSN2098 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-4, MC4031-12, MC4031-13

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

# Method Blank Summary



Job Number: MC4031
Aecount: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2098-MB | N55926.D | 1 | 10/10/11 | DFT | n/a | n/a | MSN2098 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-4, MC4031-12, MC4031-I3

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 89% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 92% | 70-130% |

# Blank Spike Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-BS | P55472.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-1, MC4031-2, MC4031-6, MC4031-11

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 66.4 | 133* a | 70-130 |
| 107-02-8 | Acrolein | 250 | 710 | 284* b | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 53.1 | 106 | 70-130 |
| 71-43-2 | Benzene | 50 | 58.1 | 116 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 56.5 | 113 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 53.3 | 107 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 51.4 | 103 | 70-130 |
| 75-25-2 | Bromoform | 50 | 48.5 | 97 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 54.4 | 109 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 62.8 | 126 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 54.3 | 109 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 60.6 | 121 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 59.2 | 118 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 58.6 | 117 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 52.1 | 104 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 55.5 | 111 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 52.9 | 106 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 53.2 | 106 | 10-160 |
| 67-66-3 | Chloroform | 50 | 55.9 | 112 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 54.8 | 110 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 55.6 | 111 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 59.8 | 120 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 51.0 | 102 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 52.2 | 104 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 51.7 | 103 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 55.5 | 111 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 59.8 | 120 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 60.1 | 120 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 60.8 | 122 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 57.8 | 116 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 63.3 | 127 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 57.3 | 115 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 56.1 | 112 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 57.4 | 115 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 56.1 | 112 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 56.6 | 113 | 70-130 |

# Blank Spike Summary

Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-BS | P55472.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-1, MC4031-2, MC4031-6, MC4031-11

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 48.9 | 98 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 58.5 | 117 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 50.9 | 102 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 53.1 | 106 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 230 | 92 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 47.5 | 95 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 56.7 | 113 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 53.4 | 107 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 58.8 | 118 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 63.1 | 126 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 59.8 | 120 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 49.3 | 99 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 52.7 | 105 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 51.8 | 104 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 54.2 | 108 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 51.2 | 102 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 60.6 | 121 | 70-130 |
| 100-42-5 | Styrene | 50 | 56.8 | 114 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 52.7 | 105 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 55.3 | 111 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 59.3 | 119 | 70-130 |
| 108-88-3 | Toluene | 50 | 57.4 | 115 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 47.3 | 95 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 47.5 | 95 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 52.8 | 106 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 51.3 | 103 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 58.7 | 117 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 55.5 | 111 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 55.3 | 111 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 59.0 | 118 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 57.7 | 115 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 43.8 | 88 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 51.1 | 102 | 70-130 |
| | m,p-Xylene | 100 | 116 | 116 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 57.4 | 115 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 173 | 115 | 70-130 |

# Blank Spike Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1816-BS | P55472.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-1, MC4031-2, MC4031-6, MC4031-11

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 90% | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 95% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1817-BS | P55498.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 55.3 | 111 | 70-130 |
| 107-02-8 | Acrolein | 250 | 886 | 354* [a] | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 59.8 | 120 | 70-130 |
| 71-43-2 | Benzene | 50 | 63.7 | 127 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 59.0 | 118 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 57.3 | 115 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 56.4 | 113 | 70-130 |
| 75-25-2 | Bromoform | 50 | 51.0 | 102 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 56.4 | 113 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 52.9 | 106 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 66.8 | 134* [b] | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 64.3 | 129 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 61.9 | 124 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 60.5 | 121 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 55.1 | 110 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 59.6 | 119 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 54.7 | 109 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 56.0 | 112 | 10-160 |
| 67-66-3 | Chloroform | 50 | 59.5 | 119 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 57.6 | 115 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 57.6 | 115 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 62.9 | 126 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 56.3 | 113 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 53.7 | 107 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 56.1 | 112 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 59.6 | 119 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 63.3 | 127 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 64.3 | 129 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 63.0 | 126 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 61.3 | 123 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 60.7 | 121 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 62.4 | 125 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 61.8 | 124 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 60.6 | 121 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 62.0 | 124 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 60.9 | 122 | 70-130 |

# Blank Spike Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1817-BS | P55498.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 53.6 | 107 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 64.0 | 128 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 54.9 | 110 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 57.4 | 115 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 290 | 116 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 53.3 | 107 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 60.4 | 121 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 60.2 | 120 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 59.5 | 119 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 65.2 | 130 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 66.2 | 132* [b] | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 56.6 | 113 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 59.5 | 119 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 58.4 | 117 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 58.5 | 117 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 49.6 | 99 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 62.8 | 126 | 70-130 |
| 100-42-5 | Styrene | 50 | 61.5 | 123 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 54.8 | 110 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 58.8 | 118 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 61.5 | 123 | 70-130 |
| 108-88-3 | Toluene | 50 | 62.7 | 125 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 61.4 | 123 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 62.0 | 124 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 54.9 | 110 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 57.3 | 115 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 62.4 | 125 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 58.2 | 116 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 58.9 | 118 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 62.3 | 125 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 60.7 | 121 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 50.1 | 100 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 55.0 | 110 | 70-130 |
| | m,p-Xylene | 100 | 122 | 122 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 61.7 | 123 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 184 | 123 | 70-130 |

# Blank Spike Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1817-BS | P55498.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-3

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 95% | 70-130% |
| 2037-26-5 | Toluene-D8 | 113% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits. Blank Spike meets program technical requirements.

# Blank Spike Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2098-BS | N55924.D | 1 | 10/10/11 | DFT | n/a | n/a | MSN2098 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-4, MC4031-12, MC4031-13

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 39.3 | 79 | 70-130 |
| 107-02-8 | Acrolein | 250 | 515 | 206* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 282 | 564* a | 70-130 |
| 71-43-2 | Benzene | 50 | 51.0 | 102 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 53.7 | 107 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 50.5 | 101 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 55.1 | 110 | 70-130 |
| 75-25-2 | Bromoform | 50 | 52.8 | 106 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 51.8 | 104 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 53.0 | 106 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 53.9 | 108 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 54.8 | 110 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 52.3 | 105 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 50.8 | 102 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 61.9 | 124 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 54.8 | 110 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 51.1 | 102 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 52.3 | 105 | 70-130 |
| 67-66-3 | Chloroform | 50 | 49.3 | 99 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 44.1 | 88 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 50.7 | 101 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 52.4 | 105 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 57.6 | 115 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 62.5 | 125 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 54.9 | 110 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 52.6 | 105 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 52.6 | 105 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 53.1 | 106 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 50.8 | 102 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 52.8 | 106 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 49.9 | 100 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 58.8 | 118 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 48.0 | 96 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 51.3 | 103 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 52.3 | 105 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 53.0 | 106 | 70-130 |

# Blank Spike Summary

Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2098-BS | N55924.D | 1 | 10/10/11 | DFT | n/a | n/a | MSN2098 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-4, MC4031-12, MC4031-13

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 41.3 | 83 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 54.5 | 109 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 51.1 | 102 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 51.9 | 104 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 304 | 122 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 47.7 | 95 | 77-137 |
| 100-41-4 | Ethylbenzene | 50 | 53.2 | 106 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 58.6 | 117 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 51.2 | 102 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 62.5 | 125 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 56.9 | 114 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 40.8 | 82 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 53.6 | 107 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 53.7 | 107 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 50.5 | 101 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 54.6 | 109 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 52.8 | 106 | 70-130 |
| 100-42-5 | Styrene | 50 | 55.6 | 111 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 58.1 | 116 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 54.8 | 110 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 56.0 | 112 | 70-130 |
| 108-88-3 | Toluene | 50 | 53.5 | 107 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 60.3 | 121 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 59.2 | 118 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 51.1 | 102 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 52.3 | 105 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 53.1 | 106 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 49.0 | 98 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 53.9 | 108 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 51.7 | 103 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 53.0 | 106 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 59.4 | 119 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 44.2 | 88 | 70-130 |
| | m,p-Xylene | 100 | 109 | 109 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 54.9 | 110 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 164 | 109 | 70-130 |

# Blank Spike Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2098-BS | N55924.D | 1 | 10/10/11 | DFT | n/a | n/a | MSN2098 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-4, MC4031-12, MC4031-13

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 90% | 70-130% |
| 2037-26-5 | Toluene-D8 | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 91% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1848-BS | K55316.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |
| MSK1848-BSD | K55317.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-5, MC4031-7, MC4031-8, MC4031-9, MC4031-10

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 2650 | 106 | 2440 | 98 | 8 | 70-130/25 |
| 107-02-8 | Acrolein | 12500 | 14400 | 115 | 15800 | 126 | 9 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 2500 | 2540 | 102 | 2450 | 98 | 4 | 70-130/25 |
| 71-43-2 | Benzene | 2500 | 2500 | 100 | 2480 | 99 | 1 | 70-130/25 |
| 108-86-1 | Bromobenzene | 2500 | 2530 | 101 | 2550 | 102 | 1 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 2500 | 2520 | 101 | 2490 | 100 | 1 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 2500 | 2550 | 102 | 2560 | 102 | 0 | 70-130/25 |
| 75-25-2 | Bromoform | 2500 | 2880 | 115 | 2790 | 112 | 3 | 70-130/25 |
| 74-83-9 | Bromomethane | 2500 | 2250 | 90 | 2300 | 92 | 2 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 2870 | 115 | 2610 | 104 | 9 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 2500 | 2490 | 100 | 2500 | 100 | 0 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2490 | 100 | 2470 | 99 | 1 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2440 | 98 | 2420 | 97 | 1 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 2500 | 2590 | 104 | 2570 | 103 | 1 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2550 | 102 | 2510 | 100 | 2 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 2500 | 2740 | 110 | 2670 | 107 | 3 | 70-130/25 |
| 75-00-3 | Chloroethane | 2500 | 2570 | 103 | 2500 | 100 | 3 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 1060 | 42 | 1040 | 42 | 2 | 10-160/25 |
| 67-66-3 | Chloroform | 2500 | 2430 | 97 | 2420 | 97 | 0 | 70-130/25 |
| 74-87-3 | Chloromethane | 2500 | 2380 | 95 | 2320 | 93 | 3 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2400 | 96 | 2410 | 96 | 0 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2490 | 100 | 2500 | 100 | 0 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 2500 | 2260 | 90 | 2270 | 91 | 0 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 2500 | 2850 | 114 | 2840 | 114 | 0 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 2500 | 2790 | 112 | 2780 | 111 | 0 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2550 | 102 | 2550 | 102 | 0 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2490 | 100 | 2490 | 100 | 0 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2490 | 100 | 2510 | 100 | 1 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 2680 | 107 | 2610 | 104 | 3 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2430 | 97 | 2400 | 96 | 1 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2470 | 99 | 2440 | 98 | 1 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2610 | 104 | 2570 | 103 | 2 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2370 | 95 | 2380 | 95 | 0 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2520 | 101 | 2480 | 99 | 2 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2470 | 99 | 2430 | 97 | 2 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2610 | 104 | 2640 | 106 | 1 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1848-BS | K55316.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |
| MSK1848-BSD | K55317.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-5, MC4031-7, MC4031-8, MC4031-9, MC4031-10

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2730 | 109 | 2660 | 106 | 3 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2610 | 104 | 2540 | 102 | 3 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2620 | 105 | 2580 | 103 | 2 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2810 | 112 | 2760 | 110 | 2 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 12500 | 14100 | 113 | 12400 | 99 | 13 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2660 | 106 | 2630 | 105 | 1 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 2500 | 2700 | 108 | 2660 | 106 | 1 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2410 | 96 | 2370 | 95 | 2 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 2500 | 3050 | 122 | 2730 | 109 | 11 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 2500 | 2850 | 114 | 2850 | 114 | 0 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2550 | 102 | 2540 | 102 | 0 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2380 | 95 | 2400 | 96 | 1 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 2650 | 106 | 2600 | 104 | 2 | 70-130/25 |
| 74-95-3 | Methylene bromide | 2500 | 2590 | 104 | 2570 | 103 | 1 | 70-130/25 |
| 75-09-2 | Methylene chloride | 2500 | 2530 | 101 | 2500 | 100 | 1 | 70-130/25 |
| 91-20-3 | Naphthalene | 2500 | 2420 | 97 | 2300 | 92 | 5 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 2500 | 2480 | 99 | 2480 | 99 | 0 | 70-130/25 |
| 100-42-5 | Styrene | 2500 | 2770 | 111 | 2770 | 111 | 0 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2720 | 109 | 2730 | 109 | 0 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2570 | 103 | 2540 | 102 | 1 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 2500 | 2820 | 113 | 2780 | 111 | 1 | 70-130/25 |
| 108-88-3 | Toluene | 2500 | 2570 | 103 | 2550 | 102 | 1 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 2270 | 91 | 2250 | 90 | 1 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2450 | 98 | 2400 | 96 | 2 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2440 | 98 | 2390 | 96 | 2 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2560 | 102 | 2550 | 102 | 0 | 70-130/25 |
| 79-01-6 | Trichloroethene | 2500 | 2580 | 103 | 2510 | 100 | 3 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2490 | 100 | 2440 | 98 | 2 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2560 | 102 | 2500 | 100 | 2 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2440 | 98 | 2440 | 98 | 0 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2410 | 96 | 2420 | 97 | 0 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 2500 | 2040 | 82 | 2000 | 80 | 2 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 2500 | 1760 | 70 | 1800 | 72 | 2 | 70-130/25 |
| | m,p-Xylene | 5000 | 5500 | 110 | 5380 | 108 | 2 | 70-130/25 |
| 95-47-6 | o-Xylene | 2500 | 2690 | 108 | 2660 | 106 | 1 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 7500 | 8190 | 109 | 8040 | 107 | 2 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1848-BS | K55316.D | 1 | 10/09/I1 | GK | n/a | n/a | MSKI848 |
| MSK1848-BSD | K55317.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-5, MC4031-7, MC4031-8, MC4031-9, MC4031-10

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 102% | 102% | 70-130% |
| 2037-26-5 | Toluene-D8 | I10% | 109% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 103% | 103% | 70-130% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3921-2MS | P55477.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2MSD | P55478.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2 | P55476.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-1, MC4031-2, MC4031-6, MC4031-11

| CAS No. | Compound | MC3921-2 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 179 | | 62.6 | 91.8 | -139* [a] | 107 | -116* [a] | 15 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 313 | 1670 | 533* [b] | 1870 | 605* [b] | 11 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 62.6 | 91.5 | 146* [b] | 103 | 167* [b] | 12 | 70-130/30 |
| 71-43-2 | Benzene | 8.4 | | 62.6 | 78.2 | 111 | 79.6 | 115 | 2 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 62.6 | 69.3 | 111 | 72.1 | 117 | 4 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 62.6 | 70.8 | 113 | 71.5 | 116 | 1 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 62.6 | 66.8 | 107 | 68.7 | 111 | 3 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 62.6 | 66.4 | 106 | 70.0 | 113 | 5 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 62.6 | 65.1 | 104 | 66.5 | 108 | 2 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 62.6 | 75.1 | 120 | 90.0 | 146* [c] | 18 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 62.6 | 68.1 | 109 | 75.9 | 123 | 11 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 62.6 | 71.2 | 114 | 76.3 | 123 | 7 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 62.6 | 71.4 | 114 | 75.6 | 122 | 6 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 62.6 | 80.3 | 128 | 81.2 | 131* [c] | 1 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 62.6 | 68.1 | 109 | 69.0 | 112 | 1 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 62.6 | 70.0 | 112 | 71.8 | 116 | 3 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 62.6 | 69.4 | 111 | 70.5 | 114 | 2 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 62.6 | 77.6 | 124 | 81.8 | 132 | 5 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 62.6 | 72.9 | 116 | 74.5 | 120 | 2 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 62.6 | 76.2 | 122 | 76.5 | 124 | 0 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 62.6 | 68.3 | 109 | 70.4 | 114 | 3 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 62.6 | 74.5 | 119 | 76.0 | 123 | 2 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 62.6 | 79.8 | 127 | 93.8 | 152* [c] | 16 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 62.6 | 66.8 | 107 | 69.2 | 112 | 4 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 62.6 | 72.4 | 116 | 76.3 | 123 | 5 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 62.6 | 65.9 | 105 | 70.6 | 114 | 7 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 62.6 | 72.3 | 115 | 74.9 | 121 | 4 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 62.6 | 71.6 | 114 | 76.6 | 124 | 7 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 62.6 | 90.0 | 144* [c] | 88.8 | 144* [c] | 1 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 62.6 | 77.9 | 124 | 78.7 | 127 | 1 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 62.6 | 73.5 | 117 | 77.2 | 125 | 5 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 62.6 | 80.8 | 129 | 83.7 | 135* [c] | 4 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 62.6 | 74.7 | 119 | 75.5 | 122 | 1 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 62.6 | 77.7 | 124 | 77.7 | 126 | 0 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 62.6 | 70.2 | 112 | 72.3 | 117 | 3 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 62.6 | 77.6 | 124 | 80.3 | 130 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3921-2MS | P55477.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2MSD | P55478.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2 | P55476.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-1, MC4031-2, MC4031-6, MC4031-11

| CAS No. | Compound | MC3921-2 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 62.6 | 64.3 | 103 | 66.4 | 107 | 3 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 62.6 | 77.7 | 124 | 78.6 | 127 | 1 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 62.6 | 64.9 | 104 | 67.5 | 109 | 4 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 62.6 | 70.1 | 112 | 72.5 | 117 | 3 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 313 | 411 | 131* c | 543 | 176* c | 28 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 62.6 | 66.6 | 106 | 75.4 | 122 | 12 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 13.4 | | 62.6 | 78.0 | 103 | 80.6 | 109 | 3 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 62.6 | 58.0 | 93 | 66.3 | 107 | 13 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 62.6 | 79.2 | 126 | 84.7 | 137* c | 7 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | 1.7 | J | 62.6 | 80.8 | 126 | 83.8 | 133* c | 4 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 62.6 | 71.6 | 114 | 77.7 | 126 | 8 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 62.6 | 70.4 | 112 | 77.0 | 125 | 9 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 62.6 | 77.3 | 123 | 91.5 | 148* c | 17 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 62.6 | 71.5 | 114 | 74.0 | 120 | 3 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 62.6 | 72.7 | 116 | 73.9 | 120 | 2 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 62.6 | 61.8 | 99 | 66.9 | 108 | 8 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | 4.0 | J | 62.6 | 75.7 | 114 | 79.6 | 122 | 5 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 62.6 | 70.9 | 113 | 73.6 | 119 | 4 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 62.6 | 65.5 | 105 | 67.2 | 109 | 3 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 62.6 | 80.8 | 129 | 88.0 | 142* c | 9 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 62.6 | 74.9 | 120 | 75.2 | 122 | 0 | 70-130/30 |
| 108-88-3 | Toluene | 10.0 | | 62.6 | 78.8 | 110 | 80.1 | 113 | 2 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 62.6 | 52.7 | 84 | 60.7 | 98 | 14 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 62.6 | 58.3 | 93 | 64.8 | 105 | 11 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 62.6 | 71.3 | 114 | 69.9 | 113 | 2 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 62.6 | 71.2 | 114 | 71.6 | 116 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 62.6 | 76.3 | 122 | 77.2 | 125 | 1 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 62.6 | 75.6 | 121 | 76.5 | 124 | 1 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 62.6 | 85.1 | 136* c | 95.9 | 155* c | 12 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 3.1 | J | 62.6 | 72.9 | 111 | 75.8 | 118 | 4 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 3.0 | J | 62.6 | 71.5 | 109 | 73.5 | 114 | 3 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 62.6 | 67.2 | 107 | 72.2 | 117 | 7 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 62.6 | 66.3 | 106 | 68.1 | 110 | 3 | 70-130/30 |
| | m,p-Xylene | 8.1 | | 125 | 149 | 112 | 152 | 116 | 2 | 70-130/30 |
| 95-47-6 | o-Xylene | 2.8 | | 62.6 | 74.0 | 114 | 75.5 | 118 | 2 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 10.9 | | 188 | 223 | 113 | 228 | 117 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC3921-2MS | P55477.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2MSD | P55478.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |
| MC3921-2 | P55476.D | 1 | 10/06/11 | AMY | n/a | n/a | MSP1816 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-1, MC4031-2, MC4031-6, MC4031-11

| CAS No. | Surrogate Recoveries | MS | MSD | MC3921-2 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 93% | 95% | 121% | 70-130% |
| 2037-26-5 | Toluene-D8 | 102% | 110% | 144%* [d] | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 94% | 99% | 150%* [d] | 70-130% |

(a) Outside control limits due to high level in sample relative to spike amount.
(b) Outside control limits. Associated samples are non-detect for this compound.
(c) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(d) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4031-3MS | P55502.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |
| MC4031-3MSD | P55503.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |
| MC4031-3 | P55501.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-3

| CAS No. | Compound | MC4031-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 61.4 | 62.1 | 101 | 47.1 | 78 | 27 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 307 | 1270 | 414* a | 1190 | 393* a | 7 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 61.4 | 92.6 | 151* b | 88.6 | 146* b | 4 | 70-130/30 |
| 71-43-2 | Benzene | 2.1 | | 61.4 | 73.5 | 116 | 69.8 | 112 | 5 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 61.4 | 65.3 | 106 | 62.4 | 103 | 5 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 61.4 | 71.4 | 116 | 68.8 | 114 | 4 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 61.4 | 65.7 | 107 | 63.6 | 105 | 3 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 61.4 | 67.0 | 109 | 64.6 | 107 | 4 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 61.4 | 61.2 | 100 | 58.4 | 96 | 5 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 61.4 | 72.3 | 118 | 64.7 | 107 | 11 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 61.4 | 73.5 | 120 | 73.5 | 121 | 0 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 61.4 | 68.6 | 112 | 66.6 | 110 | 3 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 61.4 | 66.3 | 108 | 64.1 | 106 | 3 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 61.4 | 75.3 | 123 | 71.3 | 118 | 5 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 61.4 | 64.0 | 104 | 60.6 | 100 | 5 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 61.4 | 66.5 | 108 | 63.3 | 104 | 5 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 61.4 | 65.9 | 107 | 61.3 | 101 | 7 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 61.4 | 71.7 | 117 | 75.6 | 125 | 5 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 61.4 | 72.1 | 117 | 67.2 | 111 | 7 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 61.4 | 67.3 | 110 | 65.7 | 108 | 2 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 61.4 | 63.6 | 104 | 60.3 | 100 | 5 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 61.4 | 69.5 | 113 | 66.5 | 110 | 4 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 61.4 | 83.1 | 135* b | 87.4 | 144* b | 5 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 61.4 | 66.6 | 108 | 63.9 | 105 | 4 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 61.4 | 73.0 | 119 | 70.1 | 116 | 4 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 61.4 | 65.8 | 107 | 64.4 | 106 | 2 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 61.4 | 69.4 | 113 | 66.8 | 110 | 4 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 61.4 | 70.8 | 115 | 68.1 | 112 | 4 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 61.4 | 81.3 | 132* b | 75.4 | 124 | 8 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 61.4 | 74.1 | 121 | 70.3 | 116 | 5 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 61.4 | 75.7 | 123 | 73.1 | 121 | 3 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 61.4 | 77.1 | 126 | 71.9 | 119 | 7 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 61.4 | 72.6 | 118 | 67.9 | 112 | 7 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 61.4 | 73.4 | 120 | 69.3 | 114 | 6 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 61.4 | 70.7 | 115 | 67.8 | 112 | 4 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 61.4 | 77.1 | 126 | 73.6 | 121 | 5 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4031-3MS | P55502.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |
| MC4031-3MSD | P55503.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |
| MC4031-3 | P55501.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-3

| CAS No. | Compound | MC4031-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 61.4 | 65.0 | 106 | 66.4 | 110 | 2 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 61.4 | 74.1 | 121 | 70.4 | 116 | 5 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 61.4 | 63.7 | 104 | 63.0 | 104 | 1 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 61.4 | 71.0 | 116 | 68.7 | 113 | 3 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 307 | 508 | 165* b | 491 | 162* b | 3 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 61.4 | 72.4 | 118 | 70.9 | 117 | 2 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 6.5 | | 61.4 | 69.6 | 103 | 65.7 | 98 | 6 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 61.4 | 64.9 | 106 | 65.7 | 108 | 1 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 61.4 | 86.5 | 141* b | 88.7 | 146* b | 3 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 61.4 | 73.5 | 120 | 70.3 | 116 | 4 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 61.4 | 70.7 | 115 | 68.9 | 114 | 3 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 61.4 | 76.4 | 124 | 74.1 | 122 | 3 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 61.4 | 87.0 | 142* b | 98.4 | 162* b | 12 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 61.4 | 73.5 | 120 | 69.5 | 115 | 6 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 61.4 | 71.1 | 116 | 66.7 | 110 | 6 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 61.4 | 54.9 | 89 | 58.0 | 96 | 5 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 61.4 | 69.5 | 113 | 66.2 | 109 | 5 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 61.4 | 69.3 | 113 | 65.6 | 108 | 5 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 61.4 | 62.6 | 102 | 58.9 | 97 | 6 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 61.4 | 82.2 | 134* b | 77.8 | 128 | 6 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 61.4 | 68.1 | 111 | 64.8 | 107 | 5 | 70-130/30 |
| 108-88-3 | Toluene | 6.5 | | 61.4 | 74.3 | 110 | 70.2 | 105 | 6 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 61.4 | 65.9 | 107 | 72.0 | 119 | 9 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 61.4 | 67.5 | 110 | 71.1 | 117 | 5 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 61.4 | 65.7 | 107 | 61.3 | 101 | 7 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 61.4 | 74.2 | 121 | 70.5 | 116 | 5 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 61.4 | 73.9 | 120 | 69.4 | 115 | 6 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 61.4 | 72.6 | 118 | 67.4 | 111 | 7 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 61.4 | 87.5 | 142* b | 83.8 | 138* b | 4 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 61.4 | 68.1 | 111 | 65.0 | 107 | 5 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 61.4 | 64.9 | 106 | 62.3 | 103 | 4 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 61.4 | 65.8 | 107 | 61.3 | 101 | 7 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 61.4 | 62.7 | 102 | 58.9 | 97 | 6 | 70-130/30 |
| | m,p-Xylene | 1.8 | J | 123 | 138 | 111 | 131 | 107 | 5 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 61.4 | 69.6 | 113 | 65.1 | 107 | 7 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 1.8 | J | 184 | 207 | 111 | 196 | 107 | 5 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4031-3MS | P55502.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |
| MC4031-3MSD | P55503.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |
| MC4031-3 | P55501.D | 1 | 10/07/11 | AMY | n/a | n/a | MSP1817 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-3

| CAS No. | Surrogate Recoveries | MS | MSD | MC4031-3 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dihromofluoromethane | 94% | 91% | 99% | 70-130% |
| 2037-26-5 | Toluene-D8 | 102% | 101% | 116% | 70-130% |
| 460-00-4 | 4-Bromofluorohenzene | 89% | 88% | 113% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4051-4MS | K55327.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |
| MC4051-4MSD | K55328.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |
| MC4051-4 | K55326.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-5, MC4031-7, MC4031-8, MC4031-9, MC4031-10

| CAS No. | Compound | MC4051-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 2930 | 3460 | 118 | 3610 | 123 | 4 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 14700 | 16700 | 114 | 17100 | 117 | 2 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 2930 | 2960 | 101 | 3000 | 102 | 1 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 2930 | 2990 | 102 | 2950 | 101 | 1 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 2930 | 3040 | 104 | 2970 | 101 | 2 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 2930 | 3080 | 105 | 2990 | 102 | 3 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 2930 | 3090 | 105 | 3070 | 105 | 1 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 2930 | 3290 | 112 | 3300 | 113 | 0 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 2930 | 2850 | 97 | 2800 | 96 | 2 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 2930 | 3670 | 125 | 3760 | 128 | 2 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 2930 | 3030 | 103 | 2940 | 100 | 3 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 2930 | 3030 | 103 | 2910 | 99 | 4 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 2930 | 3020 | 103 | 2880 | 98 | 5 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 2930 | 3110 | 106 | 3050 | 104 | 2 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 2930 | 3040 | 104 | 2960 | 101 | 3 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 2930 | 3230 | 110 | 3180 | 109 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 2930 | 3120 | 106 | 3000 | 102 | 4 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 2930 | 1160 | 40 | 1220 | 42 | 5 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 2930 | 2990 | 102 | 2900 | 99 | 3 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 2930 | 2910 | 99 | 2880 | 98 | 1 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 2930 | 2980 | 102 | 2860 | 98 | 4 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 2930 | 3090 | 105 | 2960 | 101 | 4 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 2930 | 2570 | 88 | 2580 | 88 | 0 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 2930 | 3390 | 116 | 3350 | 114 | 1 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 2930 | 3240 | 111 | 3230 | 110 | 0 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 2930 | 3130 | 107 | 3040 | 104 | 3 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 2930 | 3020 | 103 | 2970 | 101 | 2 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 2930 | 3010 | 103 | 2930 | 100 | 3 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 2930 | 3210 | 110 | 3110 | 106 | 3 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 2930 | 2990 | 102 | 2900 | 99 | 3 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 2930 | 2960 | 101 | 2950 | 101 | 0 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 2930 | 3090 | 105 | 3050 | 104 | 1 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 2930 | 2890 | 99 | 2790 | 95 | 4 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 2930 | 2990 | 102 | 2950 | 101 | 1 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 2930 | 2970 | 101 | 2980 | 102 | 0 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 2930 | 3120 | 106 | 3100 | 106 | 1 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4051-4MS | K55327.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |
| MC4051-4MSD | K55328.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |
| MC4051-4 | K55326.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-5, MC4031-7, MC4031-8, MC4031-9, MC4031-10

| CAS No. | Compound | MC4051-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 2930 | 3080 | 105 | 2970 | 101 | 4 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 2930 | 3050 | 104 | 2980 | 102 | 2 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 2930 | 3050 | 104 | 3090 | 105 | 1 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 2930 | 3310 | 113 | 3310 | 113 | 0 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 14700 | 15300 | 104 | 16100 | 110 | 5 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 2930 | 3030 | 103 | 3070 | 105 | 1 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 2930 | 3230 | 110 | 3120 | 106 | 3 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 2930 | 3020 | 103 | 2890 | 99 | 4 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 2930 | 4710 | 161* [a] | 4840 | 165* [a] | 3 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 2930 | 3530 | 120 | 3370 | 115 | 5 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 2930 | 3070 | 105 | 2970 | 101 | 3 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 2930 | 2880 | 98 | 2920 | 100 | 1 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 2930 | 3170 | 108 | 3280 | 112 | 3 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 2930 | 3090 | 105 | 3130 | 107 | 1 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 2930 | 3110 | 106 | 3080 | 105 | 1 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 2930 | 2700 | 92 | 2800 | 96 | 4 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 2930 | 3060 | 104 | 2910 | 99 | 5 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 2930 | 3300 | 113 | 3240 | 111 | 2 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 2930 | 3280 | 112 | 3250 | 111 | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 2930 | 2660 | 91 | 2570 | 88 | 3 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 2930 | 3330 | 114 | 3170 | 108 | 5 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 2930 | 3040 | 104 | 2990 | 102 | 2 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 2930 | 2640 | 90 | 2690 | 92 | 2 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 2930 | 2820 | 96 | 2840 | 97 | 1 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 2930 | 2970 | 101 | 2870 | 98 | 3 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 2930 | 3050 | 104 | 3040 | 104 | 0 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 2930 | 3320 | 113 | 3380 | 115 | 2 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 2930 | 2980 | 102 | 2890 | 99 | 3 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 2930 | 2980 | 102 | 3000 | 102 | 1 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 2930 | 3030 | 103 | 2870 | 98 | 5 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 2930 | 3000 | 102 | 2870 | 98 | 4 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 2930 | 564 | 19* [a] | 418 | 14* [a] | 30 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 2930 | 2420 | 83 | 2250 | 77 | 7 | 70-130/30 |
| | m,p-Xylene | ND | | 5860 | 6480 | 111 | 6360 | 109 | 2 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 2930 | 3210 | 110 | 3150 | 108 | 2 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 8790 | 9690 | 110 | 9510 | 108 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4051-4MS | K55327.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |
| MC4051-4MSD | K55328.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |
| MC4051-4 | K55326.D | 1 | 10/09/11 | GK | n/a | n/a | MSK1848 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-5, MC4031-7, MC4031-8, MC4031-9, MC4031-10

| CAS No. | Surrogate Recoveries | MS | MSD | MC4051-4 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | 98% | 107% | 70-130% |
| 2037-26-5 | Toluene-D8 | 107% | 106% | 109% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 105% | 102% | 113% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4106-1MS | N55931.D | 5 | 10/10/11 | DFT | n/a | n/a | MSN2098 |
| MC4106-1MSD | N55932.D | 5 | 10/10/11 | DFT | n/a | n/a | MSN2098 |
| MC4106-1 | N55930.D | 1 | 10/10/11 | DFT | n/a | n/a | MSN2098 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-4, MC4031-12, MC4031-13

| CAS No. | Compound | MC4106-1 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 250 | 177 | 71 | 171 | 68* [a] | 3 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 1250 | 628 | 50* [a] | 595 | 48* [a] | 5 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 250 | 1230 | 492* [b] | 1210 | 484* [b] | 2 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 250 | 217 | 87 | 212 | 85 | 2 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 250 | 258 | 103 | 254 | 102 | 2 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 250 | 226 | 90 | 217 | 87 | 4 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 250 | 254 | 102 | 255 | 102 | 0 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 250 | 255 | 102 | 252 | 101 | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 250 | 146 | 58* [a] | 154 | 62* [a] | 5 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 250 | 230 | 92 | 236 | 94 | 3 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 250 | 260 | 104 | 253 | 101 | 3 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 250 | 267 | 107 | 260 | 104 | 3 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 250 | 257 | 103 | 252 | 101 | 2 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 250 | 150 | 60* [a] | 146 | 58* [a] | 3 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 250 | 258 | 103 | 250 | 100 | 3 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 250 | 268 | 107 | 259 | 104 | 3 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 250 | 157 | 63* [a] | 150 | 60* [a] | 5 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 250 | 247 | 99 | 244 | 98 | 1 | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 250 | 227 | 91 | 220 | 88 | 3 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 250 | 120 | 48* [a] | 118 | 47* [a] | 2 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 250 | 249 | 100 | 243 | 97 | 2 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 250 | 252 | 101 | 248 | 99 | 2 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 250 | 266 | 106 | 264 | 106 | 1 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 250 | 293 | 117 | 287 | 115 | 2 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 250 | 260 | 104 | 258 | 103 | 1 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 250 | 255 | 102 | 254 | 102 | 0 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 250 | 252 | 101 | 248 | 99 | 2 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 250 | 257 | 103 | 254 | 102 | 1 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 250 | 121 | 48* [a] | 115 | 46* [a] | 5 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 250 | 221 | 88 | 215 | 86 | 3 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 250 | 225 | 90 | 224 | 90 | 0 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 250 | 180 | 72 | 174 | 70 | 3 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 250 | 209 | 84 | 203 | 81 | 3 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 250 | 193 | 77 | 186 | 74 | 4 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 250 | 247 | 99 | 244 | 98 | 1 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 250 | 259 | 104 | 253 | 101 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4106-1MS | N55931.D | 5 | 10/10/11 | DFT | n/a | n/a | MSN2098 |
| MC4106-1MSD | N55932.D | 5 | 10/10/11 | DFT | n/a | n/a | MSN2098 |
| MC4106-1 | N55930.D | 1 | 10/10/11 | DFT | n/a | n/a | MSN2098 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-4, MC4031-12, MC4031-13

| CAS No. | Compound | MC4106-1 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 250 | 193 | 77 | 185 | 74 | 4 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 250 | 224 | 90 | 213 | 85 | 5 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 250 | 232 | 93 | 234 | 94 | 1 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 250 | 218 | 87 | 226 | 90 | 4 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 1250 | 1380 | 110 | 1380 | 110 | 0 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 250 | 228 | 91 | 229 | 92 | 0 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 250 | 258 | 103 | 249 | 100 | 4 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 250 | 276 | 110 | 271 | 108 | 2 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 250 | 248 | 99 | 239 | 96 | 4 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 250 | 262 | 105 | 256 | 102 | 2 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 250 | 269 | 108 | 263 | 105 | 2 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 250 | 185 | 74 | 186 | 74 | 1 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 250 | 253 | 101 | 251 | 100 | 1 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 250 | 249 | 100 | 244 | 98 | 2 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 250 | 194 | 78 | 191 | 76 | 2 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 250 | 252 | 101 | 260 | 104 | 3 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 250 | 255 | 102 | 249 | 100 | 2 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 250 | 277 | 111 | 269 | 108 | 3 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 250 | 286 | 114 | 280 | 112 | 2 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 250 | 270 | 108 | 268 | 107 | 1 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 250 | 252 | 101 | 244 | 98 | 3 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 250 | 247 | 99 | 244 | 98 | 1 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 250 | 284 | 114 | 291 | 116 | 2 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 250 | 272 | 109 | 276 | 110 | 1 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 250 | 220 | 88 | 210 | 84 | 5 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 250 | 256 | 102 | 256 | 102 | 0 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 250 | 235 | 94 | 233 | 93 | 1 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 250 | 165 | 66* [a] | 159 | 64* [a] | 4 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 250 | 258 | 103 | 256 | 102 | 1 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 250 | 252 | 101 | 248 | 99 | 2 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 250 | 262 | 105 | 255 | 102 | 3 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 250 | 250 | 100 | 247 | 99 | 1 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 250 | 136 | 54* [a] | 127 | 51* [a] | 7 | 70-130/30 |
| | m,p-Xylene | ND | | 500 | 530 | 106 | 510 | 102 | 4 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 250 | 271 | 108 | 262 | 105 | 3 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 750 | 801 | 107 | 772 | 103 | 4 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4106-1MS | N55931.D | 5 | 10/10/11 | DFT | n/a | n/a | MSN2098 |
| MC4106-1MSD | N55932.D | 5 | 10/10/11 | DFT | n/a | n/a | MSN2098 |
| MC4106-1 | N55930.D | 1 | 10/10/11 | DFT | n/a | n/a | MSN2098 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4031-4, MC4031-12, MC4031-13

| CAS No. | Surrogate Recoveries | MS | MSD | MC4106-1 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 96% | 96% | 88% | 70-130% |
| 2037-26-5 | Toluene-D8 | 102% | 104% | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | 96% | 94% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Volatile Internal Standard Area Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSK1848-CC1831 | Injection Date: | 10/09/11 |
| Lab File ID: | K55315.D | Injection Time: | 10:07 |
| Instrument ID: | GCMSK | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 278645 | 8.86 | 358267 | 9.71 | 169411 | 12.97 | 203838 | 15.53 | 82179 | 6.47 |
| Upper Limit [a] | 557290 | 9.36 | 716534 | 10.21 | 338822 | 13.47 | 407676 | 16.03 | 164358 | 6.97 |
| Lower Limit [b] | 139323 | 8.36 | 179134 | 9.21 | 84706 | 12.47 | 101919 | 15.03 | 41090 | 5.97 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSK1848-BS | 283414 | 8.86 | 361240 | 9.71 | 174083 | 12.97 | 210633 | 15.53 | 96392 | 6.48 |
| MSK1848-BSD | 280675 | 8.86 | 358955 | 9.71 | 172634 | 12.97 | 206453 | 15.53 | 87597 | 6.48 |
| MSK1848-MB | 289658 | 8.86 | 387846 | 9.71 | 176106 | 12.97 | 201698 | 15.53 | 84414 | 6.48 |
| ZZZZZZ | 285310 | 8.86 | 378769 | 9.71 | 173142 | 12.97 | 200422 | 15.53 | 99565 | 6.48 |
| ZZZZZZ | 272070 | 8.86 | 361039 | 9.71 | 165274 | 12.97 | 195453 | 15.53 | 86414 | 6.47 |
| ZZZZZZ | 283296 | 8.86 | 383283 | 9.71 | 173079 | 12.97 | 198140 | 15.53 | 100691 | 6.48 |
| ZZZZZZ | 281484 | 8.86 | 372719 | 9.71 | 168937 | 12.97 | 195974 | 15.53 | 86376 | 6.48 |
| ZZZZZZ | 284606 | 8.86 | 375521 | 9.71 | 171715 | 12.97 | 199669 | 15.53 | 90791 | 6.48 |
| ZZZZZZ | 279247 | 8.86 | 370521 | 9.71 | 168691 | 12.97 | 195853 | 15.53 | 87159 | 6.48 |
| MC4051-4 | 278550 | 8.86 | 373114 | 9.71 | 172884 | 12.97 | 194099 | 15.53 | 82411 | 6.48 |
| MC4051-4MS | 266869 | 8.86 | 349650 | 9.71 | 167936 | 12.97 | 196654 | 15.53 | 82559 | 6.48 |
| MC4051-4MSD | 271383 | 8.86 | 349780 | 9.71 | 170259 | 12.97 | 202819 | 15.53 | 87577 | 6.48 |
| ZZZZZZ | 284115 | 8.86 | 379580 | 9.71 | 173823 | 12.97 | 205017 | 15.53 | 91991 | 6.48 |
| ZZZZZZ | 289851 | 8.86 | 380374 | 9.71 | 174295 | 12.97 | 211220 | 15.53 | 81972 | 6.48 |
| ZZZZZZ | 284077 | 8.86 | 382021 | 9.71 | 173418 | 12.97 | 205103 | 15.53 | 84623 | 6.48 |
| MC4031-7 | 292275 | 8.86 | 385662 | 9.71 | 177971 | 12.97 | 213812 | 15.53 | 91431 | 6.48 |
| MC4031-5 | 298162 | 8.86 | 392183 | 9.71 | 175517 | 12.97 | 212420 | 15.53 | 107062 | 6.47 |
| MC4031-8 | 294058 | 8.86 | 392984 | 9.71 | 175646 | 12.97 | 210250 | 15.53 | 97347 | 6.47 |
| MC4031-9 | 294119 | 8.86 | 392213 | 9.71 | 175922 | 12.97 | 210703 | 15.53 | 89388 | 6.47 |
| MC4031-10 | 289289 | 8.86 | 382749 | 9.71 | 178179 | 12.97 | 209643 | 15.53 | 96865 | 6.47 |
| ZZZZZZ | 287339 | 8.86 | 383456 | 9.71 | 170014 | 12.97 | 203605 | 15.53 | 91956 | 6.47 |
| ZZZZZZ | 286418 | 8.86 | 380577 | 9.71 | 168184 | 12.97 | 199962 | 15.53 | 80783 | 6.48 |
| ZZZZZZ | 284115 | 8.86 | 371481 | 9.71 | 169514 | 12.97 | 206505 | 15.53 | 91567 | 6.48 |
| ZZZZZZ | 289208 | 8.86 | 386842 | 9.71 | 170806 | 12.97 | 205873 | 15.53 | 89132 | 6.48 |
| ZZZZZZ | 289797 | 8.86 | 382828 | 9.71 | 171245 | 12.97 | 196722 | 15.53 | 88988 | 6.48 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSN2098-CC2093 | Injection Date: | 10/10/11 |
| Lab File ID: | N55923.D | Injection Time: | 12:05 |
| Instrument ID: | GCMSN | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 526931 | 9.03 | 773542 | 9.91 | 353089 | 13.16 | 367501 | 15.72 | 234282 | 6.58 |
| Upper Limit [a] | 1053862 | 9.53 | 1547084 | 10.41 | 706178 | 13.66 | 735002 | 16.22 | 468564 | 7.08 |
| Lower Limit [b] | 263466 | 8.53 | 386771 | 9.41 | 176545 | 12.66 | 183751 | 15.22 | 117141 | 6.08 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSN2098-BS | 529272 | 9.03 | 781929 | 9.91 | 353710 | 13.16 | 368750 | 15.72 | 198180 | 6.58 |
| MSN2098-MB | 518075 | 9.03 | 759865 | 9.91 | 330008 | 13.16 | 343190 | 15.72 | 175475 | 6.58 |
| ZZZZZZ | 510020 | 9.03 | 752634 | 9.91 | 330970 | 13.16 | 354693 | 15.72 | 146440 | 6.58 |
| ZZZZZZ | 514172 | 9.03 | 758002 | 9.91 | 329885 | 13.16 | 340064 | 15.72 | 169848 | 6.58 |
| MC4106-1 | 513712 | 9.03 | 751313 | 9.91 | 327020 | 13.16 | 337602 | 15.72 | 175502 | 6.58 |
| MC4106-1MS | 516476 | 9.03 | 763989 | 9.91 | 339062 | 13.16 | 365051 | 15.72 | 177005 | 6.58 |
| MC4106-1MSD | 514991 | 9.03 | 753254 | 9.91 | 343537 | 13.16 | 363745 | 15.72 | 176877 | 6.58 |
| ZZZZZZ | 518113 | 9.03 | 758678 | 9.91 | 334714 | 13.16 | 344041 | 15.72 | 193590 | 6.58 |
| MC4031-12 | 513555 | 9.03 | 754862 | 9.91 | 334039 | 13.16 | 340767 | 15.72 | 166573 | 6.59 |
| ZZZZZZ | 503260 | 9.03 | 745247 | 9.91 | 326020 | 13.16 | 346298 | 15.72 | 199499 | 6.58 |
| ZZZZZZ | 512136 | 9.03 | 766156 | 9.91 | 334766 | 13.16 | 348809 | 15.72 | 189697 | 6.58 |
| ZZZZZZ | 508687 | 9.03 | 764568 | 9.91 | 336736 | 13.16 | 347375 | 15.72 | 152113 | 6.58 |
| ZZZZZZ | 510974 | 9.03 | 757953 | 9.91 | 342720 | 13.16 | 369671 | 15.72 | 194441 | 6.58 |
| ZZZZZZ | 530597 | 9.03 | 779048 | 9.91 | 337031 | 13.16 | 350231 | 15.72 | 168626 | 6.58 |
| ZZZZZZ | 520706 | 9.03 | 763681 | 9.91 | 328526 | 13.16 | 340078 | 15.72 | 182374 | 6.58 |
| ZZZZZZ | 513478 | 9.03 | 758677 | 9.91 | 334984 | 13.16 | 345376 | 15.72 | 157730 | 6.58 |
| ZZZZZZ | 495214 | 9.03 | 739812 | 9.91 | 326032 | 13.17 | 337697 | 15.72 | 167085 | 6.58 |
| ZZZZZZ | 508634 | 9.03 | 745958 | 9.91 | 323526 | 13.16 | 331508 | 15.72 | 150581 | 6.58 |
| ZZZZZZ | 499660 | 9.03 | 732237 | 9.91 | 325046 | 13.16 | 333029 | 15.72 | 155355 | 6.58 |
| ZZZZZZ | 504024 | 9.03 | 737322 | 9.91 | 321936 | 13.16 | 329093 | 15.72 | 145296 | 6.58 |
| MC4031-4 | 497758 | 9.03 | 740061 | 9.91 | 328385 | 13.16 | 333417 | 15.72 | 146526 | 6.58 |
| MC4031-13 | 495076 | 9.03 | 735320 | 9.91 | 326425 | 13.16 | 328698 | 15.72 | 164901 | 6.58 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSP1816-CC1815 | Injection Date: | 10/06/11 |
| Lab File ID: | P55471.D | Injection Time: | 09:58 |
| Instrument ID: | GCMSP | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 83163 | 8.50 | 138001 | 9.35 | 74719 | 12.57 | 54357 | 15.13 | 29790 | 6.26 |
| Upper Limit [a] | 166326 | 9.00 | 276002 | 9.85 | 149438 | 13.07 | 108714 | 15.63 | 59580 | 6.76 |
| Lower Limit [b] | 41582 | 8.00 | 69001 | 8.85 | 37360 | 12.07 | 27179 | 14.63 | 14895 | 5.76 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSP1816-BS | 83854 | 8.50 | 140081 | 9.35 | 75068 | 12.57 | 54140 | 15.13 | 30900 | 6.26 |
| MSP1816-MB | 69783 | 8.51 | 114190 | 9.36 | 57324 | 12.58 | 34582 | 15.14 | 24102 | 6.31 |
| MC3921-2 | 53944 | 8.51 | 90066 | 9.36 | 45294 | 12.58 | 28489 | 15.14 | 27620 | 6.39 |
| MC3921-2MS | 78832 | 8.50 | 133947 | 9.35 | 72083 | 12.57 | 52976 | 15.13 | 43232 | 6.28 |
| MC3921-2MSD | 74780 | 8.50 | 126335 | 9.35 | 67726 | 12.57 | 49416 | 15.13 | 49242 | 6.26 |
| ZZZZZZ | 62020 | 8.51 | 104610 | 9.36 | 52375 | 12.58 | 33622 | 15.13 | 40087 | 6.32 |
| ZZZZZZ | 54959 | 8.50 | 91183 | 9.36 | 47937 | 12.58 | 32837 | 15.13 | 31178 | 6.31 |
| ZZZZZZ | 65980 | 8.51 | 111733 | 9.36 | 57230 | 12.58 | 37080 | 15.14 | 43647 | 6.34 |
| ZZZZZZ | 55569 | 8.50 | 93030 | 9.36 | 47654 | 12.58 | 32267 | 15.13 | 32324 | 6.29 |
| ZZZZZZ | 77439 | 8.50 | 125935 | 9.36 | 65483 | 12.57 | 49375 | 15.13 | 45444 | 6.29 |
| MC4031-1 | 72789 | 8.50 | 118453 | 9.36 | 58471 | 12.58 | 43146 | 15.13 | 43509 | 6.29 |
| MC4031-2 | 67303 | 8.49 | 110264 | 9.35 | 56007 | 12.57 | 40037 | 15.13 | 42083 | 6.18 |
| MC4031-6 | 88575 | 8.50 | 143581 | 9.35 | 75004 | 12.57 | 53494 | 15.13 | 42716 | 6.31 |
| MC4031-11 | 80501 | 8.50 | 131067 | 9.36 | 65595 | 12.58 | 49175 | 15.13 | 44781 | 6.30 |
| ZZZZZZ | 74489 | 8.50 | 121457 | 9.36 | 61511 | 12.58 | 41041 | 15.13 | 41168 | 6.28 |
| ZZZZZZ | 69984 | 8.50 | 115826 | 9.36 | 59202 | 12.58 | 40969 | 15.13 | 41101 | 6.29 |
| ZZZZZZ | 68754 | 8.50 | 113794 | 9.36 | 57474 | 12.58 | 37448 | 15.13 | 36550 | 6.31 |
| ZZZZZZ | 67922 | 8.50 | 113247 | 9.36 | 58349 | 12.58 | 38037 | 15.13 | 40061 | 6.31 |
| ZZZZZZ | 65660 | 8.50 | 108890 | 9.36 | 56199 | 12.58 | 35844 | 15.13 | 35906 | 6.29 |
| ZZZZZZ | 66387 | 8.50 | 109965 | 9.36 | 56738 | 12.58 | 35724 | 15.14 | 36470 | 6.32 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSP1817-CC1815 | Injection Date: | 10/07/11 |
| Lab File ID: | P55497.D | Injection Time: | 10:06 |
| Instrument ID: | GCMSP | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 82447 | 8.50 | 139556 | 9.35 | 77228 | 12.57 | 58528 | 15.13 | 33098 | 6.25 |
| Upper Limit [a] | 164894 | 9.00 | 279112 | 9.85 | 154456 | 13.07 | 117056 | 15.63 | 66196 | 6.75 |
| Lower Limit [b] | 41224 | 8.00 | 69778 | 8.85 | 38614 | 12.07 | 29264 | 14.63 | 16549 | 5.75 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSP1817-BS | 77797 | 8.50 | 128020 | 9.35 | 71061 | 12.57 | 53009 | 15.13 | 25091 | 6.22 |
| MSP1817-MB | 70073 | 8.50 | 116276 | 9.36 | 59916 | 12.58 | 38084 | 15.13 | 24441 | 6.29 |
| MC4031-3 | 65376 | 8.50 | 110054 | 9.36 | 56126 | 12.58 | 37587 | 15.13 | 39500 | 6.31 |
| MC4031-3MS | 75178 | 8.50 | 130618 | 9.35 | 73374 | 12.57 | 56272 | 15.13 | 44014 | 6.23 |
| MC4031-3MSD | 84452 | 8.50 | 142346 | 9.35 | 80045 | 12.57 | 61142 | 15.13 | 50339 | 6.23 |
| ZZZZZZ | 49960 | 8.51 | 84812 | 9.36 | 43096 | 12.58 | 29064[c] | 15.13 | 28067 | 6.37 |
| ZZZZZZ | 51032 | 8.50 | 86362 | 9.36 | 44506 | 12.58 | 29496 | 15.13 | 31509 | 6.29 |
| ZZZZZZ | 54280 | 8.50 | 89914 | 9.36 | 46663 | 12.58 | 30211 | 15.13 | 29771 | 6.36 |
| ZZZZZZ | 61642 | 8.50 | 106035 | 9.36 | 57477 | 12.57 | 41557 | 15.13 | 38107 | 6.25 |
| MC4031-2 [d] | 61321 | 8.50 | 100631 | 9.36 | 52005 | 12.57 | 35573 | 15.13 | 35821 | 6.27 |
| ZZZZZZ | 71070 | 8.50 | 113286 | 9.36 | 59441 | 12.58 | 40405 | 15.13 | 34406 | 6.31 |
| ZZZZZZ | 68541 | 8.50 | 112965 | 9.36 | 65377 | 12.57 | 50602 | 15.13 | 39553 | 6.28 |
| ZZZZZZ | 74367 | 8.51 | 120228 | 9.36 | 59710 | 12.58 | 40103 | 15.13 | 21834 | 6.37 |
| ZZZZZZ | 69877 | 8.51 | 112686 | 9.36 | 57746 | 12.58 | 38709 | 15.13 | 19576 | 6.38 |
| ZZZZZZ | 66226 | 8.50 | 111355 | 9.36 | 56701 | 12.58 | 37169 | 15.13 | 20557 | 6.34 |
| ZZZZZZ | 63040 | 8.50 | 104803 | 9.36 | 53553 | 12.58 | 33818 | 15.13 | 20850 | 6.33 |
| ZZZZZZ | 45711 | 8.50 | 76818 | 9.36 | 40107 | 12.58 | 24946[c] | 15.14 | 16473[c] | 6.29 |
| ZZZZZZ | 59794 | 8.50 | 101203 | 9.36 | 53711 | 12.58 | 33978 | 15.13 | 32414 | 6.30 |
| ZZZZZZ | 59522 | 8.50 | 101242 | 9.35 | 52251 | 12.58 | 30049 | 15.13 | 29182 | 6.33 |
| ZZZZZZ | 55291 | 8.50 | 96760 | 9.36 | 50229 | 12.57 | 31591 | 15.13 | 31702 | 6.26 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.
(d) Confirmation run for surrogate recoveries.

# Volatile Surrogate Recovery Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC4031-4 | N55946.D | 91.0 | 98.0 | 93.0 |
| MC4031-12 | N55934.D | 90.0 | 98.0 | 93.0 |
| MC4031-13 | N55947.D | 90.0 | 99.0 | 93.0 |
| MC4106-1MS | N55931.D | 96.0 | 102.0 | 97.0 |
| MC4106-1MSD | N55932.D | 96.0 | 104.0 | 96.0 |
| MSN2098-BS | N55924.D | 90.0 | 97.0 | 91.0 |
| MSN2098-MB | N55926.D | 89.0 | 97.0 | 92.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC4031-1 | P55486.D | 94.0 | 118.0 | 110.0 |
| MC4031-2 | P55509.D | 111.0 | 142.0* a | 137.0* a |
| MC4031-2 | P55487.D | 118.0 | 152.0* a | 146.0* a |
| MC4031-3 | P55501.D | 99.0 | 116.0 | 113.0 |
| MC4031-5 | K55333.D | 107.0 | 105.0 | 114.0 |
| MC4031-6 | P55488.D | 82.0 | 104.0 | 96.0 |
| MC4031-7 | K55332.D | 96.0 | 107.0 | 110.0 |
| MC4031-8 | K55334.D | 112.0 | 107.0 | 116.0 |
| MC4031-9 | K55335.D | 109.0 | 105.0 | 112.0 |
| MC4031-10 | K55336.D | 107.0 | 105.0 | 108.0 |
| MC4031-11 | P55489.D | 85.0 | 108.0 | 97.0 |
| MC3921-2MS | P55477.D | 93.0 | 102.0 | 94.0 |
| MC3921-2MSD | P55478.D | 95.0 | 110.0 | 99.0 |
| MC4031-3MS | P55502.D | 94.0 | 102.0 | 89.0 |
| MC4031-3MSD | P55503.D | 91.0 | 101.0 | 88.0 |
| MC4051-4MS | K55327.D | 101.0 | 107.0 | 105.0 |
| MC4051-4MSD | K55328.D | 98.0 | 106.0 | 102.0 |
| MSK1848-BS | K55316.D | 102.0 | 110.0 | 103.0 |
| MSK1848-BSD | K55317.D | 102.0 | 109.0 | 103.0 |
| MSK1848-MB | K55318.D | 104.0 | 103.0 | 107.0 |
| MSP1816-BS | P55472.D | 90.0 | 104.0 | 95.0 |
| MSP1816-MB | P55474.D | 83.0 | 104.0 | 111.0 |
| MSP1817-BS | P55498.D | 95.0 | 113.0 | 98.0 |
| MSP1817-MB | P55500.D | 81.0 | 100.0 | 101.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

(a) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

New England ACCUTEST LABORATORIES

# GC Volatiles

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## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1341-MB | BH24389.D | 1 | 10/06/11 | WS | n/a | n/a | GBH1341 |

The QC reported here applies to the following samples: Method: SW846 8015

MC4031-1, MC4031-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 0.95 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 86% | 36-148% |

# Method Blank Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1343-MB | BH24421A.D | 1 | 10/08/11 | AF | n/a | n/a | GBH1343 |

The QC reported here applies to the following samples: Method: SW846 8015

MC4031-3, MC4031-5, MC4031-6, MC4031-7, MC4031-8, MC4031-9, MC4031-10, MC4031-11

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 0.95 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 90% | 36-148% |

# Method Blank Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1344-MB | BH24447.D | 1 | 10/10/11 | WS | n/a | n/a | GBH1344 |

The QC reported here applies to the following samples: Method: SW846 8015

MC4031-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 0.10 | 0.070 | mg/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 91% | 60-126% |

# Blank Spike Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1341-BSP | BH24390.D | 1 | 10/06/11 | WS | n/a | n/a | GBH1341 |

The QC reported here applies to the following samples: Method: SW846 8015

MC4031-1, MC4031-2

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 21.5 | 108 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 86% | 36-148% |

# Blank Spike Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1343-BSP | BH24422A.D | 1 | 10/08/11 | AF | n/a | n/a | GBH1343 |

The QC reported here applies to the following samples: Method: SW846 8015

MC4031-3, MC4031-5, MC4031-6, MC4031-7, MC4031-8, MC4031-9, MC4031-10, MC4031-11

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 19.8 | 99 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 89% | 36-148% |

# Blank Spike Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1344-BSP | BH24448.D | 1 | 10/10/11 | WS | n/a | n/a | GBH1344 |

The QC reported here applies to the following samples: Method: SW846 8015

MC4031-4

| CAS No. | Compound | Spike mg/l | BSP mg/l | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 0.4 | 0.432 | 108 | 68-134 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 97% | 60-126% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4194-1MS | BH24398.D | 1 | 10/06/11 | WS | n/a | n/a | GBH1341 |
| MC4194-1MSD | BH24399.D | 1 | 10/06/11 | WS | n/a | n/a | GBH1341 |
| MC4194-1 | BH24397.D | 1 | 10/06/11 | WS | n/a | n/a | GBH1341 |

The QC reported here applies to the following samples: Method: SW846 8015

MC4031-1, MC4031-2

| CAS No. | Compound | MC4194-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 8.9 | U | 35.7 | 34.0 | 95 | 32.8 | 92 | 4 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4194-1 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 86% | 88% | 86% | 36-148% |

6.3.1

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# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4031-3MS | BH24443.D | 1 | 10/09/11 | AF | n/a | n/a | GBH1343 |
| MC4031-3MSD | BH24444.D | 1 | 10/09/11 | AF | n/a | n/a | GBH1343 |
| MC4031-3 | BH24432.D | 1 | 10/08/11 | AF | n/a | n/a | GBH1343 |



The QC reported here applies to the following samples: Method: SW846 8015

MC4031-3, MC4031-5, MC4031-6, MC4031-7, MC4031-8, MC4031-9, MC4031-10, MC4031-11

| CAS No. | Compound | MC4031-3 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 54 | 48.0 | 89 | 45.4 | 84 | 6 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4031-3 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 88% | 90% | 89% | 36-148% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4031-4MS | BH24450.D | 1 | 10/10/11 | WS | n/a | n/a | GBH1344 |
| MC4031-4MSD | BH24451.D | 1 | 10/10/11 | WS | n/a | n/a | GBH1344 |
| MC4031-4 | BH24449.D | 1 | 10/10/11 | WS | n/a | n/a | GBH1344 |

The QC reported here applies to the following samples: Method: SW846 8015

MC4031-4

| CAS No. | Compound | MC4031-4 mg/l | Q | Spike mg/l | MS mg/l | MS % | MSD mg/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 0.4 | 0.378 | 95 | 0.368 | 92 | 3 | 72-131/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4031-4 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 91% | 95% | 94% | 60-126% |

# Volatile Surrogate Recovery Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Method: SW846 8015 | Matrix: AQ |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC4031-4 | BH24449.D | 94.0 |
| GBH1344-BSP | BH24448.D | 97.0 |
| GBH1344-MB | BH24447.D | 91.0 |
| MC4031-4MS | BH24450.D | 91.0 |
| MC4031-4MSD | BH24451.D | 95.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 60-126% |

(a) Recovery from GC signal #1

# Volatile Surrogate Recovery Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC4031-1 | BH24404.D | 85.0 |
| MC4031-2 | BH24405.D | 83.0 |
| MC4031-3 | BH24432.D | 89.0 |
| MC4031-5 | BH24436.D | 99.0 |
| MC4031-6 | BH24437.D | 92.0 |
| MC4031-7 | BH24438.D | 90.0 |
| MC4031-8 | BH24435.D | 95.0 |
| MC4031-9 | BH24439.D | 94.0 |
| MC4031-10 | BH24433.D | 93.0 |
| MC4031-11 | BH24440.D | 88.0 |
| GBH1341-BSP | BH24390.D | 86.0 |
| GBH1341-MB | BH24389.D | 86.0 |
| GBH1343-BSP | BH24422A.D | 89.0 |
| GBH1343-MB | BH24421A.D | 90.0 |
| MC4031-3MS | BH24443.D | 88.0 |
| MC4031-3MSD | BH24444.D | 90.0 |
| MC4194-1MS | BH24398.D | 86.0 |
| MC4194-1MSD | BH24399.D | 88.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1341-CC1043 | Injection Date: | 10/06/11 |
| Lab File ID: | BH24388.D | Injection Time: | 10:50 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1341-MB | BH24389.D | 10/06/11 | 11:29 | 32.39 |
| GBH1340-MB | BH24389A.D | 10/06/11 | 11:29 | 32.39 |
| GBH1341-BSP | BH24390.D | 10/06/11 | 12:09 | 32.39 |
| GBH1340-BSP | BH24390A.D | 10/06/11 | 12:09 | 32.39 |
| MC4320-4 | BH2439I.D | 10/06/11 | 12:49 | 32.39 |
| MC4320-4MS | BH24392.D | 10/06/11 | 13:29 | 32.39 |
| MC4320-4MSD | BH24393.D | 10/06/11 | 14:08 | 32.39 |
| ZZZZZZ | BH24394.D | 10/06/11 | 14:48 | 32.39 |
| ZZZZZZ | BH24395.D | 10/06/11 | 15:28 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1340-CC1043 | Injection Date: | 10/06/11 |
| Lab File ID: | BH24388A.D | Injection Time: | 10:50 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1341-MB | BH24389.D | 10/06/11 | 11:29 | 32.39 |
| GBH1340-MB | BH24389A.D | 10/06/11 | 11:29 | 32.39 |
| GBH1341-BSP | BH24390.D | 10/06/11 | 12:09 | 32.39 |
| GBH1340-BSP | BH24390A.D | 10/06/11 | 12:09 | 32.39 |
| MC4320-4 | BH24391.D | 10/06/11 | 12:49 | 32.39 |
| MC4320-4MS | BH24392.D | 10/06/11 | 13:29 | 32.39 |
| MC4320-4MSD | BH24393.D | 10/06/11 | 14:08 | 32.39 |
| ZZZZZZ | BH24394.D | 10/06/11 | 14:48 | 32.39 |
| ZZZZZZ | BH24395.D | 10/06/11 | 15:28 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1340-CC1043 | Injection Date: | 10/06/11 |
| Lab File ID: | BH24396A.D | Injection Time: | 16:08 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC4194-1 | BH24397.D | 10/06/11 | 16:48 | 32.40 |
| MC4194-1MS | BH24398.D | 10/06/11 | 17:28 | 32.39 |
| MC4194-1MSD | BH24399.D | 10/06/11 | 18:07 | 32.39 |
| ZZZZZZ | BH24400.D | 10/06/11 | 18:47 | 32.39 |
| ZZZZZZ | BH24401.D | 10/06/11 | 19:26 | 32.39 |
| ZZZZZZ | BH24402.D | 10/06/11 | 20:06 | 32.39 |
| ZZZZZZ | BH24403.D | 10/06/11 | 20:45 | 32.39 |
| MC4031-1 | BH24404.D | 10/06/11 | 21:24 | 32.39 |
| MC4031-2 | BH24405.D | 10/06/11 | 22:03 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1341-CC1043 | Injection Date: | 10/06/11 |
| Lab File ID: | BH24396.D | Injection Time: | 16:08 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC4194-1 | BH24397.D | 10/06/11 | 16:48 | 32.40 |
| MC4194-1MS | BH24398.D | 10/06/11 | 17:28 | 32.39 |
| MC4194-1MSD | BH24399.D | 10/06/11 | 18:07 | 32.39 |
| ZZZZZZ | BH24400.D | 10/06/11 | 18:47 | 32.39 |
| ZZZZZZ | BH24401.D | 10/06/11 | 19:26 | 32.39 |
| ZZZZZZ | BH24402.D | 10/06/11 | 20:06 | 32.39 |
| ZZZZZZ | BH24403.D | 10/06/11 | 20:45 | 32.39 |
| MC4031-1 | BH24404.D | 10/06/11 | 21:24 | 32.39 |
| MC4031-2 | BH24405.D | 10/06/11 | 22:03 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1342-CC1043 | Injection Date: | 10/08/11 |
| Lab File ID: | BH24420.D | Injection Time: | 13:31 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1342-MB | BH24421.D | 10/08/11 | 14:28 | 32.40 |
| GBH1343-MB | BH24421A.D | 10/08/11 | 14:28 | 32.40 |
| GBH1342-BSP | BH24422.D | 10/08/11 | 15:08 | 32.40 |
| GBH1343-BSP | BH24422A.D | 10/08/11 | 15:08 | 32.40 |
| MC4148-1 | BH24423.D | 10/08/11 | 15:52 | 32.40 |
| MC4148-1MS | BH24424.D | 10/08/11 | 16:32 | 32.40 |
| MC4148-1MSD | BH24425.D | 10/08/11 | 17:13 | 32.39 |
| ZZZZZZ | BH24426.D | 10/08/11 | 17:53 | 32.39 |
| ZZZZZZ | BH24427.D | 10/08/11 | 18:34 | 32.39 |
| ZZZZZZ | BH24428.D | 10/08/11 | 19:14 | 32.39 |
| ZZZZZZ | BH24430.D | 10/08/11 | 20:34 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1343-CC1043 | Injection Date: | 10/08/11 |
| Lab File ID: | BH24420A.D | Injection Time: | 13:31 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1342-MB | BH24421.D | 10/08/11 | 14:28 | 32.40 |
| GBH1343-MB | BH24421A.D | 10/08/11 | 14:28 | 32.40 |
| GBH1342-BSP | BH24422.D | 10/08/11 | 15:08 | 32.40 |
| GBH1343-BSP | BH24422A.D | 10/08/11 | 15:08 | 32.40 |
| MC4148-1 | BH24423.D | 10/08/11 | 15:52 | 32.40 |
| MC4148-1MS | BH24424.D | 10/08/11 | 16:32 | 32.40 |
| MC4148-1MSD | BH24425.D | 10/08/11 | 17:13 | 32.39 |
| ZZZZZZ | BH24426.D | 10/08/11 | 17:53 | 32.39 |
| ZZZZZZ | BH24427.D | 10/08/11 | 18:34 | 32.39 |
| ZZZZZZ | BH24428.D | 10/08/11 | 19:14 | 32.39 |
| ZZZZZZ | BH24430.D | 10/08/11 | 20:34 | 32.39 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1342-CC1043 | Injection Date: | 10/08/11 |
| Lab File ID: | BH24431.D | Injection Time: | 21:14 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC4031-3 | BH24432.D | 10/08/11 | 21:53 | 32.39 |
| MC4031-10 | BH24433.D | 10/08/11 | 22:33 | 32.39 |
| ZZZZZZ | BH24434.D | 10/08/11 | 23:13 | 32.39 |
| MC4031-8 | BH24435.D | 10/08/11 | 23:53 | 32.39 |
| MC4031-5 | BH24436.D | 10/09/11 | 00:33 | 32.39 |
| MC4031-6 | BH24437.D | 10/09/11 | 01:12 | 32.39 |
| MC4031-7 | BH24438.D | 10/09/11 | 01:52 | 32.39 |
| MC4031-9 | BH24439.D | 10/09/11 | 02:32 | 32.39 |
| MC4031-11 | BH24440.D | 10/09/11 | 03:12 | 32.39 |
| ZZZZZZ | BH24441.D | 10/09/11 | 03:51 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1343-CC1043 | Injection Date: | 10/08/11 |
| Lab File ID: | BH24431A.D | Injection Time: | 21:14 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC4031-3 | BH24432.D | 10/08/11 | 21:53 | 32.39 |
| MC4031-10 | BH24433.D | 10/08/11 | 22:33 | 32.39 |
| ZZZZZZ | BH24434.D | 10/08/11 | 23:13 | 32.39 |
| MC4031-8 | BH24435.D | 10/08/11 | 23:53 | 32.39 |
| MC4031-5 | BH24436.D | 10/09/11 | 00:33 | 32.39 |
| MC4031-6 | BH24437.D | 10/09/11 | 01:12 | 32.39 |
| MC4031-7 | BH24438.D | 10/09/11 | 01:52 | 32.39 |
| MC4031-9 | BH24439.D | 10/09/11 | 02:32 | 32.39 |
| MC4031-11 | BH24440.D | 10/09/11 | 03:12 | 32.39 |
| ZZZZZZ | BH24441.D | 10/09/11 | 03:51 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1342-CC1043 | Injection Date: | 10/09/11 |
| Lab File ID: | BH24442.D | Injection Time: | 04:31 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC4031-3MS | BH24443.D | 10/09/11 | 05:11 | 32.40 |
| MC4031-3MSD | BH24444.D | 10/09/11 | 05:50 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

6.5.9

6

# GC Surrogate Retention Time Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1343-CC1043 | Injection Date: | 10/09/11 |
| Lab File ID: | BH24442A.D | Injection Time: | 04:31 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.39 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC4031-3MS | BH24443.D | 10/09/11 | 05:11 | 32.40 |
| MC4031-3MSD | BH24444.D | 10/09/11 | 05:50 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

6.5.10

6

# GC Surrogate Retention Time Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1344-CC1043 | Injection Date: | 10/10/11 |
| Lab File ID: | BH24446.D | Injection Time: | 10:39 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1344-MB | BH24447.D | 10/10/11 | 11:20 | 32.40 |
| GBH1344-BSP | BH24448.D | 10/10/11 | 12:01 | 32.40 |
| MC4031-4 | BH24449.D | 10/10/11 | 12:42 | 32.40 |
| MC4031-4MS | BH24450.D | 10/10/11 | 13:22 | 32.40 |
| MC4031-4MSD | BH24451.D | 10/10/11 | 14:03 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

New England ACCUTEST LABORATORIES

## GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26474-MB | BG31657.D | 1 | 10/11/11 | KD | 10/04/11 | OP26474 | GBG1139 |

The QC reported here applies to the following samples: Method: SW846-8015

MC4031-4

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 0.20 | 0.14 | mg/l | |
| | TPH (>C28-C40) | ND | 0.20 | 0.14 | mg/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 84-15-1 | o-Terphenyl | 90% | 40-140% |

# Method Blank Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26532-MB | BG31613.D | 1 | 10/10/11 | KD | 10/08/11 | OP26532 | GBG1135 |

The QC reported here applies to the following samples: Method: SW846-8015

MC4031-1, MC4031-2, MC4031-3, MC4031-5, MC4031-6, MC4031-7, MC4031-8, MC4031-9, MC4031-10, MC4031-11



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 16 | 12 | mg/kg | |
| | TPH (>C28-C40) | ND | 16 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 84-15-1 | o-Terphenyl | 47% | 40-140% |

# Blank Spike Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26474-BS | BG31658.D | 1 | 10/11/11 | KD | 10/04/11 | OP26474 | GBG1139 |

The QC reported here applies to the following samples: Method: SW846-8015

MC4031-4

| CAS No. | Compound | Spike mg/l | BSP mg/l | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 2.5 | 2.49 | 100 | 46-120 |
| | TPH (> C28-C40) | 2.5 | 1.96 | 78 | 46-120 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 84-15-1 | o-Terphenyl | 86% | 40-140% |

# Blank Spike Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26532-BS | BG31615.D | 1 | 10/10/11 | KD | 10/08/11 | OP26532 | GBG1135 |

The QC reported here applies to the following samples: Method: SW846-8015

MC4031-1, MC4031-2, MC4031-3, MC4031-5, MC4031-6, MC4031-7, MC4031-8, MC4031-9, MC4031-10, MC4031-11



| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 162 | 176 | 109 | 63-139 |
| | TPH (> C28-C40) | 162 | 128 | 79 | 46-103 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 84-15-1 | o-Terphenyl | 96% | 40-140% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26474-MS | BG31659.D | 1 | 10/11/11 | KD | 10/04/1I | OP26474 | GBG1139 |
| OP26474-MSD | BG31660.D | 1 | 10/11/11 | KD | 10/04/11 | OP26474 | GBG1139 |
| MC4242-1 | BG31661.D | 1 | 10/11/11 | KD | 10/04/11 | OP26474 | GBG1139 |

The QC reported here applies to the following samples: Method: SW846-8015

MC4031-4

| CAS No. | Compound | MC4242-1 mg/l | Q | Spike mg/l | MS mg/l | MS % | MSD mg/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 2.5 | 3.05 | 122* [a] | 2.62 | 105 | 15 | 45-120/25 |
| | TPH (>C28-C40) | ND | | 2.5 | 2.40 | 96 | 2.19 | 88 | 9 | 45-120/25 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4242-1 | Limits |
|---|---|---|---|---|---|
| 84-15-I | o-Terphenyl | 94% | 90% | 102% | 40-140% |

(a) Outside control limits due to possible matrix interference.

7.3.1

7

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26532-MS | BG31621.D | 1 | 10/10/11 | KD | 10/08/11 | OP26532 | GBG1135 |
| OP26532-MSD | BG31623.D | 1 | 10/10/11 | KD | 10/08/11 | OP26532 | GBG1135 |
| MC4031-3 | BG31625.D | 1 | 10/11/11 | KD | 10/08/11 | OP26532 | GBG1135 |

The QC reported here applies to the following samples: Method: SW846-8015

MC4031-1, MC4031-2, MC4031-3, MC4031-5, MC4031-6, MC4031-7, MC4031-8, MC4031-9, MC4031-10, MC4031-11

7.3.2

7

| CAS No. | Compound | MC4031-3 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 179 | 125 | 70 | 96.6 | 54 | 26 | 8-154/127 |
| | TPH (>C28-C40) | ND | | 179 | 96.5 | 54 | 80.0 | 45 | 19 | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4031-3 | Limits |
|---|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 64% | 46% | 88% | 40-140% |

# Semivolatile Surrogate Recovery Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Method: SW846-8015 | Matrix: AQ |
|---|---|

Samples and QC shown here apply to the abovc method

| Lab Sample ID | Lab File ID | SI [a] |
|---|---|---|
| MC4031-4 | BG31662.D | 112.0 |
| OP26474-BS | BG31658.D | 86.0 |
| OP26474-MB | BG31657.D | 90.0 |
| OP26474-MS | BG31659.D | 94.0 |
| OP26474-MSD | BG31660.D | 90.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = o-Terphenyl | 40-140% |

(a) Recovery from GC signal #1

# Semivolatile Surrogate Recovery Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC4031-1 | BG31620.D | 76.0 |
| MC4031-2 | BG31616.D | 72.0 |
| MC4031-3 | BG31625.D | 88.0 |
| MC4031-5 | BG31629.D | 86.0 |
| MC4031-6 | BG31631.D | 72.0 |
| MC4031-7 | BG31627.D | 72.0 |
| MC4031-8 | BG31648.D | 66.0 |
| MC4031-8 | BG31639.D | 108.0 |
| MC4031-9 | BG31649.D | 100.0 |
| MC4031-9 | BG31641.D | 106.0 |
| MC4031-10 | BG31630.D | 84.0 |
| MC4031-11 | BG31614.D | 74.0 |
| OP26532-BS | BG31615.D | 96.0 |
| OP26532-MB | BG31613.D | 47.0 |
| OP26532-MS | BG31621.D | 64.0 |
| OP26532-MSD | BG31623.D | 46.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = o-Terphenyl | 40-140% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1136-ICC1136 | Injection Date: | 10/10/11 |
| Lab File ID: | BG31606.D | Injection Time: | 16:47 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 15.85 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26532-BS | BG31615.D | 10/10/11 | 20:10 | 15.23 |
| ZZZZZZ | BG31617.D | 10/10/11 | 21:02 | 15.22 |
| OP26532-MS | BG31621.D | 10/10/11 | 22:44 | 15.22 |
| OP26532-MSD | BG31623.D | 10/10/11 | 23:35 | 15.22 |
| MC4031-3 | BG31625.D | 10/11/11 | 00:30 | 15.23 |
| MC4031-7 | BG31627.D | 10/11/11 | 01:25 | 15.22 |
| MC4031-5 | BG31629.D | 10/11/11 | 02:21 | 15.23 |

Surrogate Compounds

S1 = o-Terphenyl

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1135-ICC1135 | Injection Date: | 10/10/11 |
| Lab File ID: | BG31607.D | Injection Time: | 16:47 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 15.23 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BG31612.D | 10/10/11 | 19:19 | 15.84 |
| OP26532-MB | BG31613.D | 10/10/11 | 19:19 | 15.23 |
| MC4031-11 | BG31614.D | 10/10/11 | 20:10 | 15.84 |
| MC4031-2 | BG31616.D | 10/10/11 | 21:02 | 15.84 |
| ZZZZZZ | BG31618.D | 10/10/11 | 21:52 | 15.84 |
| MC4031-1 | BG31620.D | 10/10/11 | 22:44 | 15.84 |
| ZZZZZZ | BG31622.D | 10/10/11 | 23:35 | 15.84 |
| ZZZZZZ | BG31624.D | 10/11/11 | 00:30 | 15.88 |
| ZZZZZZ | BG31626.D | 10/11/11 | 01:25 | 15.84 |

Surrogate Compounds

S1 = o-Terphenyl

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1136-CC1136 | Injection Date: | 10/11/11 |
| Lab File ID: | BG31628.D | Injection Time: | 02:21 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 15.85 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC4031-6 | BG3163I.D | 10/11/11 | 03:15 | 15.22 |
| MC4031-10 | BG31630.D | 10/I1/11 | 03:15 | 15.82 |

Surrogate Compounds

S1 = o-Terphenyl

(a) Retention time from GC signal #1

7.5.3

7

# GC Surrogate Retention Time Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1139-CC1135 | Injection Date: | 10/11/11 |
| Lab File ID: | BG31656.D | Injection Time: | 15:52 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 15.23 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26474-MB | BG31657.D | 10/11/11 | 16:58 | 15.23 |
| OP26474-BS | BG31658.D | 10/11/11 | 17:51 | 15.23 |
| OP26474-MS | BG31659.D | 10/11/11 | 18:49 | 15.23 |
| OP26474-MSD | BG31660.D | 10/11/11 | 19:48 | 15.23 |
| MC4242-1 | BG31661.D | 10/11/11 | 20:47 | 15.23 |
| MC4031-4 | BG31662.D | 10/11/11 | 21:37 | 15.23 |
| GBG1139-ECC113 | BG31663.D | 10/11/11 | 22:28 | 15.23 |

Surrogate Compounds

S1 = o-Terphenyl

(a) Retention time from GC signal #1

New England ACCUTEST LABORATORIES

## General Chemistry

## QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC4031-1 Analyzed: 30-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP34 (10-12.5)092711

| | | |
|---|---|---|
| Wet Weight (Total) | 24.828 | g |
| Tare Weight | 18.251 | g |
| Dry Weight (Total) | 24.376 | g |
| Solids, Percent | 93.1 | % |

Sample: MC4031-2 Analyzed: 30-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP34 (20-22.5)092711

| | | |
|---|---|---|
| Wet Weight (Total) | 30.189 | g |
| Tare Weight | 21.966 | g |
| Dry Weight (Total) | 29.098 | g |
| Solids, Percent | 86.7 | % |

Sample: MC4031-3 Analyzed: 30-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP34 (30-31.5)092711

| | | |
|---|---|---|
| Wet Weight (Total) | 30.981 | g |
| Tare Weight | 24.233 | g |
| Dry Weight (Total) | 30.46 | g |
| Solids, Percent | 92.3 | % |

Sample: MC4031-5 Analyzed: 30-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP35 (10-12.5)092711

| | | |
|---|---|---|
| Wet Weight (Total) | 36.717 | g |
| Tare Weight | 28.587 | g |
| Dry Weight (Total) | 35.419 | g |
| Solids, Percent | 84 | % |

Sample: MC4031-6 Analyzed: 30-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP35 (20-22.5)092711

| | | |
|---|---|---|
| Wet Weight (Total) | 28.439 | g |
| Tare Weight | 20.822 | g |
| Dry Weight (Total) | 27.54 | g |
| Solids, Percent | 88.2 | % |

Sample: MC4031-7 Analyzed: 30-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP35 (30-31.5)092711

| | | |
|---|---|---|
| Wet Weight (Total) | 28.437 | g |
| Tare Weight | 20.823 | g |
| Dry Weight (Total) | 27.898 | g |
| Solids, Percent | 92.9 | % |

8.1
8

# Percent Solids Raw Data Summary



Job Number: MC4031
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC4031-8 Analyzed: 30-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP36 (10-12.5)092711

| | | |
|---|---|---|
| Wet Weight (Total) | 32.68 | g |
| Tare Weight | 24.37 | g |
| Dry Weight (Total) | 31.697 | g |
| Solids, Percent | 88.2 | % |

Sample: MC4031-9 Analyzed: 30-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP36 (10-12.5)092711 DUP

| | | |
|---|---|---|
| Wet Weight (Total) | 34.551 | g |
| Tare Weight | 27.967 | g |
| Dry Weight (Total) | 33.679 | g |
| Solids, Percent | 86.8 | % |

Sample: MC4031-10 Analyzed: 30-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP36 (20-22.5)092711

| | | |
|---|---|---|
| Wet Weight (Total) | 30.011 | g |
| Tare Weight | 21.641 | g |
| Dry Weight (Total) | 28.602 | g |
| Solids, Percent | 83.2 | % |

Sample: MC4031-11 Analyzed: 30-SEP-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP36 (30-31.5)092711

| | | |
|---|---|---|
| Wet Weight (Total) | 37.673 | g |
| Tare Weight | 26.908 | g |
| Dry Weight (Total) | 37.163 | g |
| Solids, Percent | 95.3 | % |

# SVE Install 2011 Data Review

**Laboratory SDG: MC4623**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 1/24/2012**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| SVE-06 (16-18) 101311 | SVE-06 (16-18) 101311 |
| TB 101311 | |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS/LCSD recoveries were outside evaluation criteria. Although not indicated in the laboratory case narrative, acetone was detected in the method blank. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 1.7°C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required. Additionally, sample IDs for SVE-06 (16-18) 101311 and SVE-06 (16-18) 101311 were incorrectly transcribed by the laboratory; data were reported using correct COC designations for sample IDs.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

Yes

| Blank ID | Parameter | Analyte | Concentration |
|---|---|---|---|
| MSV128-MB | VOCs | Acetone | 9.4 ug/L |

Analytical data that required qualification based on blank contamination are in included in the table below. Analytical data that were reported non-detect or at concentrations greater than five times (5X) the associated blank concentration (10X for common laboratory contaminants) did not require qualification.

| Sample ID | Parameter | Analyte | New RL | Qualification |
|---|---|---|---|---|
| SVE-06 (16-18) 101311 | VOCs | Acetone | 21.4 ug/kg | **U** |
| SVE-06 (16-18) 101311 DUP | VOCs | Acetone | 26.2 ug/kg | **U** |

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSV128-BS | VOCs | Acrolein | **318** | NA | 70-130 |
| MSV128-BS | VOCs | Acrylonitrile | **600** | NA | 70-130 |
| MSV128-BS | VOCs | 2-Hexanone | **133** | NA | 70-130 |
| MSV128-BS | VOCs | Isopropylbenzene | **138** | NA | 70-130 |
| MSN2124-BS/BSD | VOCs | Acrolein | **147/150** | 2 | 70-130/25 |
| MSN2124-BS/BSD | VOCs | Acrylonitrile | **418/408** | 2 | 70-130/25 |
| MSN2124-BS/BSD | VOCs | 2-Butanone (MEK) | **134/136** | 1 | 70-130/25 |
| MSN2124-BS/BSD | VOCs | Ethyl methacrylate | **73/74** | 2 | 70-130/25 |

Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS/LCSD MSN2124-BS/BSD was associated with trip blank sample TB 101311. Trip blank samples are quality control samples and are not qualified. No qualification of data was required.

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

No

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

Yes

| Field ID | Field Duplicate ID |
|---|---|
| SVE-06 (16-18) 101311 | SVE-06 (16-18) 101311 |

*Were field duplicates within evaluation criteria?*

Yes

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

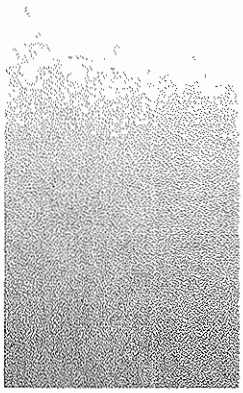
## 12.0 Additional Qualifications

*Were additional qualifications applied?*

No

New England ACCUTEST LABORATORIES

11/23/11





Technical Report for

Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC4623

Sampling Date: 10/13/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **64**

Reviewed on 1/23/2012

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Reza Pand
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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# Sample Summary

Shell Oil

Job No: MC4623

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| MC4623-1 | 10/13/11 | 08:45 | SWMM | 10/14/11 | SO | Soil | SUZ-06 (16-18) 101311 |
| MC4623-2 | 10/13/11 | 08:45 | SWMM | 10/14/11 | SO | Soil | SUZ-06 (16-18) 10311 DUP |
| MC4623-3 | 10/13/11 | 07:00 | SWMM | 10/14/11 | AQ | Trip Blank Water | TB 101311 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC4623 |
| **Site:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East | **Report Date** | 11/1/2011 4:15:33 PM |

2 Sample(s), 1 Trip Blank(s) were collected on 10/13/2011 and were received at Accutest on 10/14/2011 properly preserved, at 1.7 Deg. C and intact. These Samples received an Accutest job number of MC4623. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix:** AQ **Batch ID:** MSN2124

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC4674-6MS, MC4674-6MSD were used as the QC samples indicated.
- BS/BSD Recovery(s) for 2-Butanone (MEK), Acrolein, Ethyl methacrylate are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 2-Hexanone, Acetone, Acrolein, Dichlorodifluoromethane, Ethyl methacrylate, Naphthalene, Trichlorofluoromethane, Vinyl chloride are outside control limits. Outside control limits due to possible matrix interferenece. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2-Hexanone, Acetone, Dichlorodifluoromethane, Ethyl methacrylate, Trichlorofluoromethane, Vinyl chloride are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSN2124-BS/BSD/MS/MSD for Acrylonitrile: Outsikle control limits. Associated samples are non-detect for this compound.

**Matrix:** SO **Batch ID:** MSV128

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC4771-3MS, MC4771-3MSD were used as the QC samples indicated.
- Sample(s) MC4623-1, MC4623-2 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank.
- Blank Spike Recovery(s) for 2-Hexanone, Acrolein, Acrylonitrile, Isopropylbenzene are outside control limits. Associated samples are non-detect for this compound.
- Matrix Spike Recovery(s) for 1,1,2,2-Tetrachloroethane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 4-Methyl-2-pentanone (MIBK), Acetone, Isopropylbenzene, Styrene, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,1,2,2-Tetrachloroethane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 4-Methyl-2-pentanone (MIBK), Acetone, Styrene, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MC4771-3MS/MSD for Acrolein, Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

## Volatiles by GC By Method SW846 8015

**Matrix:** SO **Batch ID:** GBH1353

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC4625-6MS, MC4625-6MSD were used as the QC samples indicated.
- Calibration check standard GBH1352-CC1043 utilized the same file as GBH1353-CC1043.

## Extractables by GC By Method SW846-8015

| Matrix: SO | Batch ID: OP26617 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC4289-1MS, MC4289-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MS/MSD Recovery(s) for TPH (C10-C28) are outside control limits. Outside control limits due to high level in sample relative to spike amount.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix: SO | Batch ID: GN36593 |
|---|---|

- Sample(s) MC4622-15DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC4623).

New England ACCUTEST LABORATORIES

## Sample Results

Report of Analysis

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SUZ-06 (16-18) 101311 | | |
| Lab Sample ID: | MC4623-1 | Date Sampled: | 10/13/11 |
| Matrix: | SO - Soil | Date Received: | 10/14/11 |
| Method: | SW846 8260B | Percent Solids: | 89.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2885.D | 1 | 10/25/11 | AMY | n/a | n/a | MSV128 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.92 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~21.4~~ | 5.7 | 5.7 | ug/kg | B |
| 107-02-8 | Acrolein | ND | 28 | 19 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.7 | 2.3 | ug/kg | |
| 71-43-2 | Benzene | 2.2 | 0.57 | 0.14 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.7 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.7 | 1.2 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.3 | 0.24 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.3 | 0.54 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.3 | 0.77 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.7 | 1.4 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.7 | 1.4 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.7 | 0.19 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.7 | 0.74 | ug/kg | |
| 75-15-0 | Carbon disulfide | 4.9 | 5.7 | 1.1 | ug/kg | J |
| 56-23-5 | Carbon tetrachloride | ND | 2.3 | 0.26 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.3 | 0.11 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.7 | 0.30 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.7 | 5.7 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.3 | 0.17 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.7 | 0.25 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.7 | 0.16 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.7 | 1.3 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.7 | 5.7 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.3 | 0.74 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.3 | 0.22 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.3 | 0.17 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.3 | 0.16 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.3 | 0.16 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.3 | 0.39 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.3 | 0.17 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.3 | 0.17 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.3 | 0.36 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SUZ-06 (16-18) 101311 | | |
| Lab Sample ID: | MC4623-1 | Date Sampled: | 10/13/11 |
| Matrix: | SO - Soil | Date Received: | 10/14/11 |
| Method: | SW846 8260B | Percent Solids: | 89.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.3 | 0.31 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.3 | 0.29 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.3 | 0.26 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.7 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.7 | 0.21 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.7 | 0.22 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.3 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.3 | 0.78 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 28 | 28 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.7 | 3.5 | ug/kg | |
| 100-41-4 | Ethylbenzene | 5.9 | 2.3 | 0.15 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.7 | 5.7 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.7 | 1.2 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.7 | 0.18 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.7 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.3 | 0.70 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.7 | 0.96 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.7 | 0.35 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.3 | 0.41 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.7 | 5.7 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 0.68 | 5.7 | 0.18 | ug/kg | J |
| 100-42-5 | Styrene | ND | 5.7 | 0.57 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.7 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.3 | 0.20 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.3 | 0.19 | ug/kg | |
| 108-88-3 | Toluene | 5.8 | 5.7 | 0.20 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.7 | 1.3 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.7 | 5.7 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.3 | 0.21 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.3 | 0.29 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.3 | 0.22 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.3 | 1.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.7 | 0.24 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2.1 | 5.7 | 0.18 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.3 | 5.7 | 0.21 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 5.7 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.3 | 0.73 | ug/kg | |
| | m,p-Xylene | 2.8 | 2.3 | 0.29 | ug/kg | |
| 95-47-6 | o-Xylene | 0.78 | 2.3 | 0.21 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 3.6 | 2.3 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SUZ-06 (16-18) 101311 | | |
| Lab Sample ID: | MC4623-1 | Date Sampled: | 10/13/11 |
| Matrix: | SO - Soil | Date Received: | 10/14/11 |
| Method: | SW846 8260B | Percent Solids: | 89.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 84% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SUZ-06 (16-18) 101311 | | |
| Lab Sample ID: | MC4623-1 | Date Sampled: | 10/13/11 |
| Matrix: | SO - Soil | Date Received: | 10/14/11 |
| Method: | SW846 8015 | Percent Solids: | 89.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24617.D | 1 | 10/18/11 | WS | n/a | n/a | GBH1353 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 1.09 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 16.0 | 52 | 9.9 | mg/kg | J |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 87% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SUZ-06 (16-18) 101311 | | |
| Lab Sample ID: | MC4623-1 | Date Sampled: | 10/13/11 |
| Matrix: | SO - Soil | Date Received: | 10/14/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 89.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31890.D | 1 | 10/23/11 | KD | 10/17/11 | OP26617 | GBG1151 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.2 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 18 | 14 | mg/kg | |
| | TPH (>C28-C40) | ND | 18 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 75% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SUZ-06 (16-18) 10311 DUP | | |
| Lab Sample ID: | MC4623-2 | Date Sampled: | 10/13/11 |
| Matrix: | SO - Soil | Date Received: | 10/14/11 |
| Method: | SW846 8260B | Percent Solids: | 91.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V2886.D | 1 | 10/25/11 | AMY | n/a | n/a | MSV128 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.28 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~26.2~~ | 5.2 | 5.2 | ug/kg | B |
| 107-02-8 | Acrolein | ND | 26 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.2 | 2.1 | ug/kg | |
| 71-43-2 | Benzene | 2.6 | 0.52 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.2 | 0.20 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.2 | 1.1 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.1 | 0.22 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.1 | 0.49 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.1 | 0.70 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.2 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.2 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzeue | ND | 5.2 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.2 | 0.67 | ug/kg | |
| 75-15-0 | Carbon disulfide | 4.5 | 5.2 | 1.0 | ug/kg | J |
| 56-23-5 | Carbon tetrachloride | ND | 2.1 | 0.23 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.1 | 0.097 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.2 | 0.27 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.2 | 5.2 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.1 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.2 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.2 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.2 | 1.2 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.2 | 5.2 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.1 | 0.67 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.1 | 0.20 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.1 | 0.16 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.1 | 0.15 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.1 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.1 | 0.35 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.1 | 0.16 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.1 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.1 | 0.33 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SUZ-06 (16-18) 10311 DUP | | |
| Lab Sample ID: | MC4623-2 | Date Sampled: | 10/13/11 |
| Matrix: | SO - Soil | Date Received: | 10/14/11 |
| Method: | SW846 8260B | Percent Solids: | 91.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.1 | 0.28 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.1 | 0.26 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.1 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.2 | 1.2 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.2 | 0.19 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.2 | 0.20 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.1 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.1 | 0.71 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 26 | 26 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.2 | 3.2 | ug/kg | |
| 100-41-4 | Ethylbenzene | 5.8 | 2.1 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.2 | 5.2 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.2 | 1.1 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.2 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.2 | 0.17 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.1 | 0.64 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.2 | 0.87 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.2 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.1 | 0.37 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.2 | 5.2 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 0.61 | 5.2 | 0.17 | ug/kg | J |
| 100-42-5 | Styrene | ND | 5.2 | 0.52 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.2 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.1 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.1 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | 5.5 | 5.2 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.2 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.2 | 5.2 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.1 | 0.19 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.1 | 0.26 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.1 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.1 | 0.95 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.2 | 0.22 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2.0 | 5.2 | 0.16 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.2 | 5.2 | 0.19 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 5.2 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.1 | 0.66 | ug/kg | |
| | m,p-Xylene | 2.8 | 2.1 | 0.26 | ug/kg | |
| 95-47-6 | o-Xylene | 0.78 | 2.1 | 0.19 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 3.6 | 2.1 | 0.13 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SUZ-06 (16-18) 10311 DUP | | |
| Lab Sample ID: | MC4623-2 | Date Sampled: | 10/13/11 |
| Matrix: | SO - Soil | Date Received: | 10/14/11 |
| Method: | SW846 8260B | Percent Solids: | 91.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 97% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SUZ-06 (16-18) 10311 DUP | | |
| Lab Sample ID: | MC4623-2 | Date Sampled: | 10/13/11 |
| Matrix: | SO - Soil | Date Received: | 10/14/11 |
| Method: | SW846 8015 | Percent Solids: | 91.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24618.D | 1 | 10/18/11 | WS | n/a | n/a | GBH1353 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.72 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 15 | 2.9 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 86% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SUZ-06 (16-18) 10311 DUP | | |
| Lab Sample ID: | MC4623-2 | Date Sampled: | 10/13/11 |
| Matrix: | SO - Soil | Date Received: | 10/14/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 91.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG31889.D | 1 | 10/23/11 | KD | 10/17/11 | OP26617 | GBG1151 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.3 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 18 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 18 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 83% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | TB 101311 | | |
| Lab Sample ID: | MC4623-3 | Date Sampled: | 10/13/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 10/14/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | N56631.D | 1 | 10/27/11 | JP | n/a | n/a | MSN2I24 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | TB 101311 | | |
| Lab Sample ID: | MC4623-3 | Date Sampled: | 10/13/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 10/14/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 5.0 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | TB 101311 | | |
| Lab Sample ID: | MC4623-3 | Date Sampled: | 10/13/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 10/14/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 93% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 96% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 87% | | 70-130% |

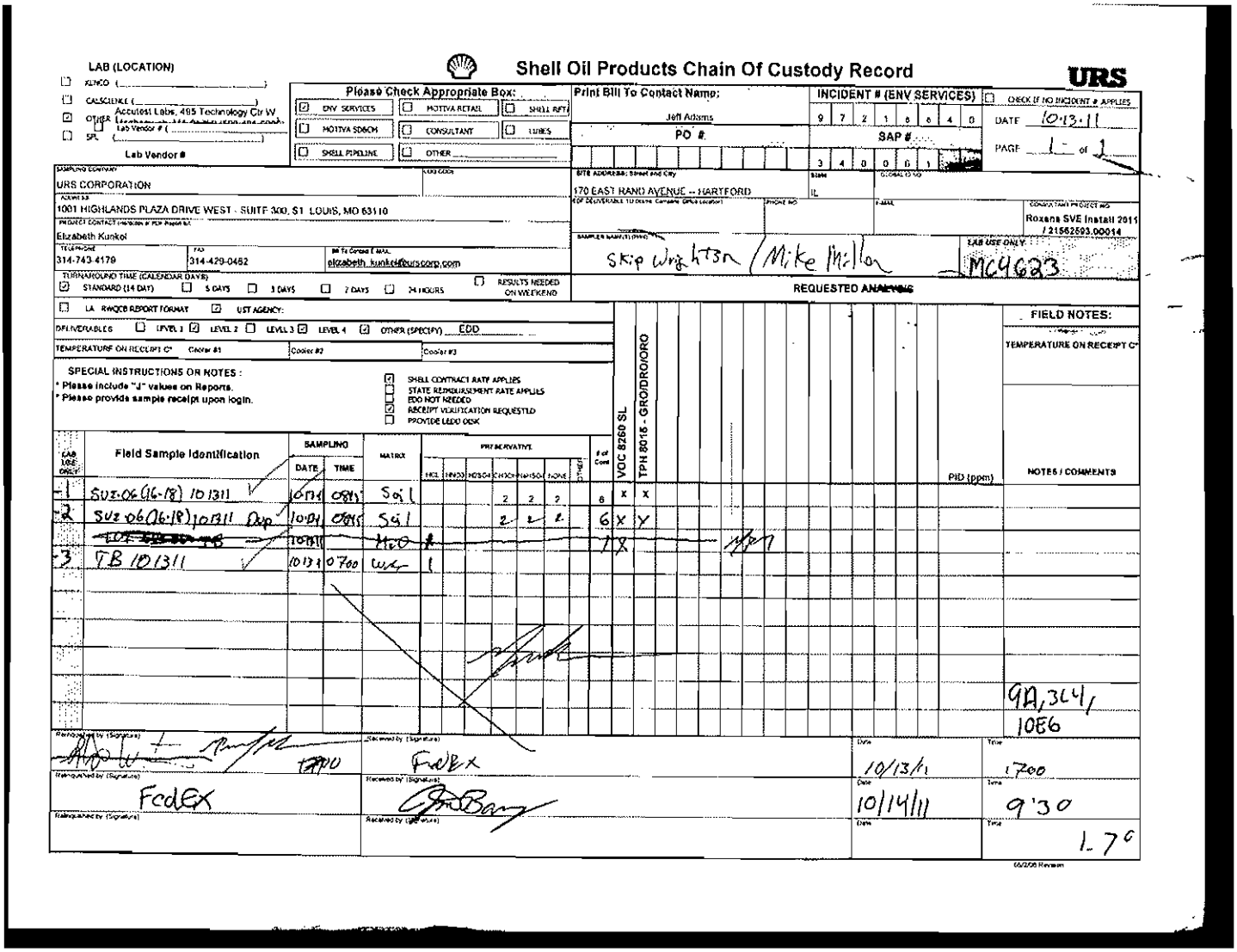
ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

## Misc. Forms

### Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody





# Shell Oil Products Chain Of Custody Record

URS

LAB (LOCATION)
- ☐ KENCO (_____)
- ☐ CALSCIENCE (_____)
- ☑ OTHER Accutest Labs, 495 Technology Ctr W
- ☐ SPL (_____) Lab Vendor # (_____)

Lab Vendor #

Please Check Appropriate Box:
- ☑ ENV SERVICES
- ☐ MOTIVA RETAIL
- ☐ SHELL RFT
- ☐ MOTIVA SD&CM
- ☐ CONSULTANT
- ☐ LUBES
- ☐ SHELL PIPELINE
- ☐ OTHER

Print Bill To Contact Name: Jeff Adams

PO #

INCIDENT # (ENV SERVICES): 9 7 2 1 8 8 4 0

SAP #: 3 4 0 0 0 6 1

☐ CHECK IF NO INCIDENT # APPLIES

DATE 10-13-11

PAGE 1 of 1

SAMPLING COMPANY: URS CORPORATION

LOG CODE

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST LOUIS, MO 63110

PROJECT CONTACT (Hardcopy or PDF Report to): Elizabeth Kunkel

TELEPHONE: 314-743-4179 FAX: 314-429-0462 Bill To Contact E-MAIL: elizabeth_kunkel@urscorp.com

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

SITE ADDRESS: Street and City: 170 EAST RAND AVENUE -- HARTFORD State: IL GLOBAL ID NO

EDF DELIVERABLE TO (Name, Company, Office Location) PHONE NO E-MAIL

CONSULTANT PROJECT NO: Roxana SVE Install 2011 / 21562593.00014

SAMPLER NAME(S) (PRINT): Skip Wrightson / Mike Millon

LAB USE ONLY: MC4623

REQUESTED ANALYSIS

☐ LA RWQCB REPORT FORMAT ☑ UST AGENCY:

DELIVERABLES ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C° Cooler #1 Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
- Please include "J" values on Reports.
- Please provide sample receipt upon login.

- ☑ SHELL CONTRACT RATE APPLIES
- ☐ STATE REIMBURSEMENT RATE APPLIES
- ☐ EDD NOT NEEDED
- ☑ RECEIPT VERIFICATION REQUESTED
- ☐ PROVIDE LEDD DISK

FIELD NOTES: TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE HCL | HNO3 | H2SO4 | CHOCK | NaHSO4 | NONE | OTHER | # of Cont | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | SV2-06(16-18) 101311 | 10/13/11 | 0815 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -2 | SV2-06(16-18) 101311 Dup | 10/13/11 | 0815 | Soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| | ~~[illegible]~~ | ~~10/13/11~~ | | ~~H2O~~ | ~~1~~ | | | | | | | ~~1~~ | ~~X~~ | | | |
| -3 | TB 101311 | 10/13/11 | 0700 | WL | 1 | | | | | | | | | | | |

9A, 3C4, 10E6

| Relinquished by (Signature) | Received by (Signature) | Date | Time |
|---|---|---|---|
| [signature] 1700 | FedEx | 10/13/11 | 1700 |
| FedEx | [signature] | 10/14/11 | 9:30 |
| | | | 1.7° |

05/2/08 Revision

MC4623: Chain of Custody
Page 1 of 1

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC4623

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC4623-1 | Collected: 13-OCT-11 08:45 By: SWMM | | Received: 14-OCT-11 | | By: JB | |
| SUZ-06 (16-18) 101311 | | | | | | |
| MC4623-1 | SM21 2540 B MOD. | 18-OCT-11 | HS | | | %SOL |
| MC4623-1 | SW846 8015 | 18-OCT-11 01:27 | WS | | | V8015GRO |
| MC4623-1 | SW846-8015 | 23-OCT-11 19:31 | KD | 17-OCT-11 | CA | B8015DROORO |
| MC4623-1 | SW846 8260B | 25-OCT-11 14:51 | AMY | | | V8260SL |
| MC4623-2 | Collected: 13-OCT-11 08:45 By: SWMM | | Received: 14-OCT-11 | | By: JB | |
| SUZ-06 (16-18) 10311 DUP | | | | | | |
| MC4623-2 | SM21 2540 B MOD. | 18-OCT-11 | HS | | | %SOL |
| MC4623-2 | SW846 8015 | 18-OCT-11 02:07 | WS | | | V8015GRO |
| MC4623-2 | SW846-8015 | 23-OCT-11 18:44 | KD | 17-OCT-11 | CA | B8015DROORO |
| MC4623-2 | SW846 8260B | 25-OCT-11 15:21 | AMY | | | V8260SL |
| MC4623-3 | Collected: 13-OCT-11 07:00 By: SWMM | | Received: 14-OCT-11 | | By: JB | |
| TB 101311 | | | | | | |
| MC4623-3 | SW846 8260B | 27-OCT-11 04:30 | JP | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 10/14/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC4623-1.1 | Walk In Ref #9 | Hamid Siamak | 10/18/11 11:26 | Retrieve from Storage |
| MC4623-1.1 | Hamid Siamak | Walk In Ref #9 | 10/18/11 12:45 | Return to Storage |
| MC4623-1.2 | Walk In Ref #9 | Mahmoud Afzali | 10/17/11 14:26 | Retrieve from Storage |
| MC4623-1.2 | Mahmoud Afzali | Walk In Ref #9 | 10/17/11 20:37 | Return to Storage |
| MC4623-1.3 | VOC Ref #10 | Amy Min Yang | 10/25/11 12:01 | Retrieve from Storage |
| MC4623-1.3 | Amy Min Yang | GCMSV | 10/25/11 12:01 | Load on Instrument |
| MC4623-1.3 | GCMSV | Amy Min Yang | 10/28/11 08:45 | Unload from Instrument |
| MC4623-1.3 | Amy Min Yang | VOC Ref #10 | 10/28/11 08:45 | Return to Storage |
| MC4623-1.5 | VOC Ref #10 | William Shao | 10/17/11 09:56 | Retrieve from Storage |
| MC4623-1.5 | William Shao | GCBH | 10/17/11 09:56 | Load on Instrument |
| MC4623-1.5 | GCBH | William Shao | 10/17/11 09:56 | Unload from Instrument |
| MC4623-1.5 | William Shao | VOC Ref #10 | 10/17/11 09:56 | Return to Storage |
| MC4623-2.1 | Walk In Ref #9 | Hamid Siamak | 10/18/11 11:26 | Retrieve from Storage |
| MC4623-2.1 | Hamid Siamak | Walk In Ref #9 | 10/18/11 12:45 | Return to Storage |
| MC4623-2.2 | Walk In Ref #9 | Mahmoud Afzali | 10/17/11 14:26 | Retrieve from Storage |
| MC4623-2.2 | Mahmoud Afzali | Walk In Ref #9 | 10/17/11 20:37 | Return to Storage |
| MC4623-2.4 | VOC Ref #10 | Amy Min Yang | 10/25/11 12:01 | Retrieve from Storage |
| MC4623-2.4 | Amy Min Yang | GCMSV | 10/25/11 12:01 | Load on Instrument |
| MC4623-2.4 | GCMSV | Amy Min Yang | 10/28/11 08:45 | Unload from Instrument |
| MC4623-2.4 | Amy Min Yang | VOC Ref #10 | 10/28/11 08:45 | Return to Storage |
| MC4623-2.5 | VOC Ref #10 | William Shao | 10/17/11 09:56 | Retrieve from Storage |
| MC4623-2.5 | William Shao | GCBH | 10/17/11 09:56 | Load on Instrument |
| MC4623-2.5 | GCBH | William Shao | 10/17/11 09:56 | Unload from Instrument |
| MC4623-2.5 | William Shao | VOC Ref #10 | 10/17/11 09:56 | Return to Storage |
| MC4623-3.1 | VOC Ref #3 | Jugal Patel | 10/26/11 15:19 | Retrieve from Storage |
| MC4623-3.1 | Jugal Patel | GCMSN | 10/26/11 15:19 | Load on Instrument |
| MC4623-3.1 | GCMSN | Jugal Patel | 10/27/11 16:28 | Unload from Instrument |
| MC4623-3.1 | Jugal Patel | VOC Ref #3 | 10/27/11 16:28 | Return to Storage |

New England ACCUTEST LABORATORIES

## GC/MS Volatiles

5

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV128-MB | V2880A.D | 1 | 10/25/11 | AMY | n/a | n/a | MSV128 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4623-1, MC4623-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 9.4 | 5.0 | 5.0 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV128-MB | V2880A.D | 1 | 10/25/11 | AMY | n/a | n/a | MSV128 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4623-1, MC4623-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV128-MB | V2880A.D | 1 | 10/25/11 | AMY | n/a | n/a | MSV128 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4623-1, MC4623-2

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | 70-130% |
| 2037-26-5 | Toluene-D8 | 100% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 97% | 70-130% |

# Method Blank Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2124-MB | N56630.D | 1 | 10/27/11 | JP | n/a | n/a | MSN2124 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC4623-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |

# Method Blank Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2124-MB | N56630.D | 1 | 10/27/11 | JP | n/a | n/a | MSN2124 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4623-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 5.0 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadieue | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

# Method Blank Summary

Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2124-MB | N56630.D | 1 | 10/27/11 | JP | n/a | n/a | MSN2124 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4623-3

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 93% | 70-130% |
| 2037-26-5 | Toluene-D8 | 95% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 87% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

# Blank Spike Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV128-BS | V2879A.D | 1 | 10/25/11 | AMY | n/a | n/a | MSV128 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4623-1, MC4623-2

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 62.9 | 126 | 70-130 |
| 107-02-8 | Acrolein | 250 | 795 | 318* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 300 | 600* a | 70-130 |
| 71-43-2 | Benzene | 50 | 56.5 | 113 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 56.7 | 113 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 56.0 | 112 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 52.1 | 104 | 70-130 |
| 75-25-2 | Bromoform | 50 | 50.6 | 101 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 56.5 | 113 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 56.2 | 112 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 61.3 | 123 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 60.5 | 121 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 59.1 | 118 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 51.0 | 102 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 58.4 | 117 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 56.5 | 113 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 55.7 | 111 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 32.8 | 66 | 10-160 |
| 67-66-3 | Chloroform | 50 | 56.2 | 112 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 52.1 | 104 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 56.8 | 114 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 58.0 | 116 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 49.7 | 99 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 54.2 | 108 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 59.8 | 120 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 57.1 | 114 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 56.8 | 114 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 55.8 | 112 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 59.6 | 119 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 57.2 | 114 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 54.8 | 110 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 61.1 | 122 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 56.2 | 112 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 57.8 | 116 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 57.0 | 114 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 57.2 | 114 | 70-130 |

# Blank Spike Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV128-BS | V2879A.D | 1 | 10/25/11 | AMY | n/a | n/a | MSV128 |

5.2.1

5

The QC reported here applies to the following samples: Method: SW846 8260B

MC4623-1, MC4623-2

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 52.8 | 106 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 57.9 | 116 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 53.7 | 107 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 55.6 | 111 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 238 | 95 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 50.7 | 101 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 58.9 | 118 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 58.8 | 118 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 66.3 | 133* a | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 69.1 | 138* a | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 62.3 | 125 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 57.8 | 116 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 56.9 | 114 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 57.2 | 114 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 54.5 | 109 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 58.3 | 117 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 60.5 | 121 | 70-130 |
| 100-42-5 | Styrene | 50 | 60.6 | 121 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 60.7 | 121 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 57.5 | 115 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 57.1 | 114 | 70-130 |
| 108-88-3 | Toluene | 50 | 55.9 | 112 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 57.6 | 115 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 60.6 | 121 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 52.1 | 104 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 56.2 | 112 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 57.7 | 115 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 53.8 | 108 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 51.4 | 103 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 58.5 | 117 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 58.0 | 116 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 37.4 | 75 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 45.9 | 92 | 70-130 |
| | m,p-Xylene | 100 | 116 | 116 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 59.7 | 119 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 176 | 117 | 70-130 |

# Blank Spike Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV128-BS | V2879A.D | 1 | 10/25/11 | AMY | n/a | n/a | MSV128 |

5.2.1

5

The QC reported here applies to the following samples: Method: SW846 8260B

MC4623-1, MC4623-2

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2124-BS | N56627.D | 1 | 10/27/11 | JP | n/a | n/a | MSN2124 |
| MSN2124-BSD | N56628.D | 1 | 10/27/11 | JP | n/a | n/a | MSN2124 |

5.3.1

5

The QC reported here applies to the following samples: Method: SW846 8260B

MC4623-3

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 59.6 | 119 | 58.1 | 116 | 3 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 367 | 147* a | 374 | 150* a | 2 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 209 | 418* b | 204 | 408* b | 2 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 48.1 | 96 | 46.5 | 93 | 3 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 48.3 | 97 | 47.6 | 95 | 1 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 50.5 | 101 | 49.7 | 99 | 2 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 55.1 | 110 | 55.0 | 110 | 0 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 49.8 | 100 | 50.6 | 101 | 2 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 47.4 | 95 | 45.9 | 92 | 3 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 66.9 | 134* a | 67.8 | 136* a | 1 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 48.3 | 97 | 46.1 | 92 | 5 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 48.4 | 97 | 46.9 | 94 | 3 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 46.7 | 93 | 45.9 | 92 | 2 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 43.8 | 88 | 42.5 | 85 | 3 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 63.5 | 127 | 61.7 | 123 | 3 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 50.8 | 102 | 50.5 | 101 | 1 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 45.8 | 92 | 45.0 | 90 | 2 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 47.9 | 96 | 47.2 | 94 | 1 | 70-130/25 |
| 67-66-3 | Chloroform | 50 | 49.3 | 99 | 48.3 | 97 | 2 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 41.0 | 82 | 40.2 | 80 | 2 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 45.0 | 90 | 43.9 | 88 | 2 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 47.1 | 94 | 45.9 | 92 | 3 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 42.2 | 84 | 41.3 | 83 | 2 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 60.4 | 121 | 60.4 | 121 | 0 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 50.5 | 101 | 51.2 | 102 | 1 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 49.1 | 98 | 48.2 | 96 | 2 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 48.4 | 97 | 47.0 | 94 | 3 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 48.8 | 98 | 47.2 | 94 | 3 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 48.8 | 98 | 46.7 | 93 | 4 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 49.1 | 98 | 48.2 | 96 | 2 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 49.7 | 99 | 48.9 | 98 | 2 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 53.9 | 108 | 51.6 | 103 | 4 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 45.8 | 92 | 45.5 | 91 | 1 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 47.1 | 94 | 45.8 | 92 | 3 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 47.9 | 96 | 47.2 | 94 | 1 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 47.4 | 95 | 47.8 | 96 | 1 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Projeet: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2124-BS | N56627.D | 1 | 10/27/11 | JP | n/a | n/a | MSN2124 |
| MSN2124-BSD | N56628.D | 1 | 10/27/11 | JP | n/a | n/a | MSN2124 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4623-3

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 50.1 | 100 | 49.2 | 98 | 2 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 52.1 | 104 | 49.0 | 98 | 6 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 49.7 | 99 | 49.1 | 98 | 1 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 61.8 | 124 | 61.6 | 123 | 0 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 216 | 86 | 226 | 90 | 5 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 36.4 | 73* a | 37.0 | 74* a | 2 | 77-137/25 |
| 100-41-4 | Ethylbenzene | 50 | 49.1 | 98 | 48.4 | 97 | 1 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 53.7 | 107 | 51.6 | 103 | 4 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 61.5 | 123 | 61.9 | 124 | 1 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 53.6 | 107 | 52.5 | 105 | 2 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 51.4 | 103 | 49.9 | 100 | 3 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 60.6 | 121 | 61.3 | 123 | 1 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 42.4 | 85 | 43.3 | 87 | 2 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 52.2 | 104 | 50.9 | 102 | 3 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 48.7 | 97 | 47.5 | 95 | 2 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 40.3 | 81 | 40.4 | 81 | 0 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 46.0 | 92 | 44.7 | 89 | 3 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 52.9 | 106 | 52.1 | 104 | 2 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 57.4 | 115 | 57.3 | 115 | 0 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 37.9 | 76 | 37.7 | 75 | 1 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 52.5 | 105 | 51.8 | 104 | 1 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 50.7 | 101 | 49.7 | 99 | 2 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 48.3 | 97 | 48.3 | 97 | 0 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 51.5 | 103 | 50.3 | 101 | 2 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 52.1 | 104 | 50.7 | 101 | 3 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 48.7 | 97 | 48.7 | 97 | 0 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 55.4 | 111 | 55.1 | 110 | 1 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 50.0 | 100 | 47.3 | 95 | 6 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 46.1 | 92 | 45.8 | 92 | 1 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 46.9 | 94 | 45.4 | 91 | 3 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 47.3 | 95 | 46.2 | 92 | 2 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 45.0 | 90 | 45.3 | 91 | 1 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 40.7 | 81 | 40.4 | 81 | 1 | 70-130/25 |
| | m,p-Xylene | 100 | 100 | 100 | 99.5 | 100 | 1 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 51.2 | 102 | 51.5 | 103 | 1 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 152 | 101 | 151 | 101 | 1 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2124-BS | N56627.D | 1 | 10/27/11 | JP | n/a | n/a | MSN2124 |
| MSN2124-BSD | N56628.D | 1 | 10/27/11 | JP | n/a | n/a | MSN2124 |

5.3.1

The QC reported here applies to the following samples: Method: SW846 8260B

MC4623-3

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 92% | 93% | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 85% | 85% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4771-3MS | V2894.D | 1 | 10/25/11 | AMY | n/a | n/a | MSV128 |
| MC4771-3MSD | V2895.D | 1 | 10/25/11 | AMY | n/a | n/a | MSV128 |
| MC4771-3 | V2893.D | 1 | 10/25/11 | AMY | n/a | n/a | MSV128 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4623-1, MC4623-2

| CAS No. | Compound | MC4771-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 14.5 | B | 63.8 | 40.3 | 40* [a] | 38.2 | 39* [a] | 5 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 319 | 584 | 183* [b] | 484 | 158* [b] | 19 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 63.8 | 325 | 510* [b] | 307 | 500* [b] | 6 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 63.8 | 66.5 | 104 | 63.4 | 103 | 5 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 63.8 | 65.9 | 103 | 62.6 | 102 | 5 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 63.8 | 69.4 | 109 | 66.3 | 108 | 5 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 63.8 | 62.5 | 98 | 59.7 | 97 | 5 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 63.8 | 64.7 | 101 | 62.3 | 102 | 4 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 63.8 | 70.1 | 110 | 66.3 | 108 | 6 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 63.8 | 92.7 | 145* [a] | 88.2 | 144* [a] | 5 | 70-130/30 |
| 104-51-8 | n-Bntylbenzene | ND | | 63.8 | 69.1 | 108 | 66.0 | 108 | 5 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 63.8 | 72.0 | 113 | 68.4 | 111 | 5 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 63.8 | 72.7 | 114 | 69.0 | 112 | 5 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 63.8 | 61.4 | 96 | 58.3 | 95 | 5 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 63.8 | 70.8 | 111 | 67.9 | 111 | 4 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 63.8 | 63.3 | 99 | 61.3 | 100 | 3 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 63.8 | 69.7 | 109 | 65.3 | 106 | 7 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 63.8 | ND | 0* [a] | ND | 0* [a] | nc | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 63.8 | 67.8 | 106 | 64.5 | 105 | 5 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 63.8 | 65.8 | 103 | 61.4 | 100 | 7 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 63.8 | 66.3 | 104 | 62.9 | 103 | 5 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 63.8 | 65.5 | 103 | 62.5 | 102 | 5 | 70-130/30 |
| 96-12-8 | 1,2-Dihromo-3-chloropropane | ND | | 63.8 | 78.3 | 123 | 74.6 | 122 | 5 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 63.8 | 66.3 | 104 | 64.2 | 105 | 3 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 63.8 | 74.8 | 117 | 71.9 | 117 | 4 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 63.8 | 63.1 | 99 | 60.8 | 99 | 4 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 63.8 | 61.8 | 97 | 59.3 | 97 | 4 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorohenzene | ND | | 63.8 | 59.7 | 94 | 57.6 | 94 | 4 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 63.8 | 76.2 | 119 | 71.6 | 117 | 6 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 63.8 | 68.9 | 108 | 65.6 | 107 | 5 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 63.8 | 69.6 | 109 | 66.4 | 108 | 5 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 63.8 | 73.6 | 115 | 69.7 | 114 | 5 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 63.8 | 66.7 | 105 | 63.5 | 104 | 5 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 63.8 | 68.7 | 108 | 65.9 | 107 | 4 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 63.8 | 67.2 | 105 | 64.6 | 105 | 4 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 63.8 | 70.9 | 111 | 68.5 | 112 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4771-3MS | V2894.D | 1 | 10/25/11 | AMY | n/a | n/a | MSV128 |
| MC4771-3MSD | V2895.D | 1 | 10/25/11 | AMY | n/a | n/a | MSV128 |
| MC4771-3 | V2893.D | 1 | 10/25/11 | AMY | n/a | n/a | MSV128 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4623-1, MC4623-2

| CAS No. | Compound | MC4771-3 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 63.8 | 60.8 | 95 | 58.6 | 96 | 4 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 63.8 | 67.7 | 106 | 64.7 | 105 | 5 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 63.8 | 59.1 | 93 | 57.2 | 93 | 3 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 63.8 | 62.9 | 99 | 61.6 | 100 | 2 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 319 | 411 | 129 | 382 | 125 | 7 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 63.8 | 65.3 | 102 | 61.8 | 101 | 6 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 63.8 | 66.7 | 105 | 64.4 | 105 | 4 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 63.8 | 68.8 | 108 | 64.7 | 105 | 6 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 63.8 | 67.2 | 105 | 64.5 | 105 | 4 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 63.8 | 83.6 | 131* [a] | 79.2 | 129 | 5 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 63.8 | 70.8 | 111 | 66.8 | 109 | 6 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 63.8 | 77.5 | 122 | 74.6 | 122 | 4 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 63.8 | 91.2 | 143* [a] | 86.7 | 141* [a] | 5 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 63.8 | 73.2 | 115 | 69.2 | 113 | 6 | 70-130/30 |
| 75-09-2 | Methylene chloride | 2.6 | | 63.8 | 69.8 | 105 | 65.9 | 103 | 6 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 63.8 | 59.6 | 93 | 56.1 | 91 | 6 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 63.8 | 70.8 | 111 | 67.0 | 109 | 6 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 63.8 | 41.9 | 66* [a] | 38.2 | 62* [a] | 9 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 63.8 | 71.8 | 113 | 69.1 | 113 | 4 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 63.8 | 85.7 | 134* [a] | 81.2 | 132* [a] | 5 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 63.8 | 65.6 | 103 | 63.3 | 103 | 4 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 63.8 | 64.5 | 101 | 61.9 | 101 | 4 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 63.8 | 53.2 | 83 | 51.8 | 84 | 3 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 63.8 | 54.5 | 85 | 53.7 | 88 | 1 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 63.8 | 63.6 | 100 | 60.4 | 98 | 5 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 63.8 | 73.0 | 114 | 69.4 | 113 | 5 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 63.8 | 66.2 | 104 | 64.0 | 104 | 3 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 63.8 | 69.5 | 109 | 64.8 | 106 | 7 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 63.8 | 74.9 | 117 | 73.3 | 119 | 2 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 63.8 | 65.4 | 103 | 61.6 | 100 | 6 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 63.8 | 67.6 | 106 | 63.8 | 104 | 6 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 63.8 | 35.1 | 55* [a] | 29.9 | 49* [a] | 16 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 63.8 | 58.5 | 92 | 54.4 | 89 | 7 | 70-130/30 |
| | m,p-Xylene | ND | | 128 | 129 | 101 | 125 | 102 | 3 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 63.8 | 66.6 | 104 | 64.7 | 105 | 3 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 191 | 196 | 102 | 190 | 103 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4771-3MS | V2894.D | 1 | 10/25/11 | AMY | n/a | n/a | MSV128 |
| MC4771-3MSD | V2895.D | 1 | 10/25/11 | AMY | n/a | n/a | MSV128 |
| MC4771-3 | V2893.D | 1 | 10/25/11 | AMY | n/a | n/a | MSV128 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4623-1, MC4623-2

| CAS No. | Surrogate Recoveries | MS | MSD | MC4771-3 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 104% | 102% | 98% | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | 98% | 98% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 105% | 101% | 100% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4674-6MS | N56635.D | 5 | 10/27/11 | JP | n/a | n/a | MSN2124 |
| MC4674-6MSD | N56636.D | 5 | 10/27/11 | JP | n/a | n/a | MSN2124 |
| MC4674-6 | N56634.D | 1 | 10/27/11 | JP | n/a | n/a | MSN2124 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4623-3

| CAS No. | Compound | MC4674-6 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 250 | 105 | 42* [a] | 96.1 | 38* [a] | 9 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 1250 | 1650 | 132* [a] | 1550 | 124 | 6 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 250 | 1050 | 420* [b] | 1070 | 428* [b] | 2 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 250 | 231 | 92 | 222 | 89 | 4 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 250 | 236 | 94 | 241 | 96 | 2 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 250 | 267 | 107 | 257 | 103 | 4 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 250 | 281 | 112 | 272 | 109 | 3 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 250 | 250 | 100 | 245 | 98 | 2 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 250 | 248 | 99 | 232 | 93 | 7 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 250 | 188 | 75 | 189 | 76 | 1 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 250 | 204 | 82 | 205 | 82 | 0 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 250 | 205 | 82 | 202 | 81 | 1 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 250 | 209 | 84 | 206 | 82 | 1 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 250 | 182 | 73 | 179 | 72 | 2 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 250 | 237 | 95 | 232 | 93 | 2 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 250 | 262 | 105 | 247 | 99 | 6 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 250 | 201 | 80 | 199 | 80 | 1 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 250 | 240 | 96 | 230 | 92 | 4 | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 250 | 250 | 100 | 239 | 96 | 4 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 250 | 190 | 76 | 185 | 74 | 3 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 250 | 215 | 86 | 212 | 85 | 1 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 250 | 228 | 91 | 227 | 91 | 0 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 250 | 194 | 78 | 207 | 83 | 6 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 250 | 307 | 123 | 300 | 120 | 2 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 250 | 259 | 104 | 251 | 100 | 3 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 250 | 241 | 96 | 243 | 97 | 1 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 250 | 238 | 95 | 234 | 94 | 2 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 250 | 238 | 95 | 238 | 95 | 0 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 250 | 171 | 68* [a] | 164 | 66* [a] | 4 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 250 | 236 | 94 | 229 | 92 | 3 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 250 | 257 | 103 | 250 | 100 | 3 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 250 | 207 | 83 | 203 | 81 | 2 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 250 | 231 | 92 | 220 | 88 | 5 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 250 | 218 | 87 | 212 | 85 | 3 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 250 | 240 | 96 | 230 | 92 | 4 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 250 | 244 | 98 | 239 | 96 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4674-6MS | N56635.D | 5 | 10/27/11 | JP | n/a | n/a | MSN2124 |
| MC4674-6MSD | N56636.D | 5 | 10/27/11 | JP | n/a | n/a | MSN2124 |
| MC4674-6 | N56634.D | 1 | 10/27/11 | JP | n/a | n/a | MSN2124 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4623-3

| CAS No. | Compound | MC4674-6 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 250 | 204 | 82 | 200 | 80 | 2 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 250 | 207 | 83 | 202 | 81 | 2 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 250 | 249 | 100 | 241 | 96 | 3 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 250 | 307 | 123 | 300 | 120 | 2 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 1250 | 1110 | 89 | 1040 | 83 | 7 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 250 | 176 | 70* [a] | 178 | 71* [a] | 1 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 250 | 238 | 95 | 225 | 90 | 6 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 250 | 216 | 86 | 217 | 87 | 0 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 250 | 173 | 69* [a] | 165 | 66* [a] | 5 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 250 | 236 | 94 | 237 | 95 | 0 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 250 | 227 | 91 | 225 | 90 | 1 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 250 | 302 | 121 | 300 | 120 | 1 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 250 | 190 | 76 | 187 | 75 | 2 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 250 | 258 | 103 | 254 | 102 | 2 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 250 | 245 | 98 | 238 | 95 | 3 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 250 | 163 | 65* [a] | 191 | 76 | 16 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 250 | 204 | 82 | 203 | 81 | 0 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 250 | 269 | 108 | 254 | 102 | 6 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 250 | 297 | 119 | 280 | 112 | 6 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 250 | 204 | 82 | 208 | 83 | 2 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 250 | 220 | 88 | 212 | 85 | 4 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 250 | 244 | 98 | 235 | 94 | 4 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 250 | 208 | 83 | 229 | 92 | 10 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 250 | 232 | 93 | 245 | 98 | 5 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 250 | 217 | 87 | 213 | 85 | 2 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 250 | 246 | 98 | 242 | 97 | 2 | 70-130/30 |
| 79-01-6 | Tricbloroethene | ND | | 250 | 235 | 94 | 224 | 90 | 5 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 250 | 173 | 69* [a] | 166 | 66* [a] | 4 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 250 | 217 | 87 | 222 | 89 | 2 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 250 | 222 | 89 | 219 | 88 | 1 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 250 | 219 | 88 | 217 | 87 | 1 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 250 | 230 | 92 | 229 | 92 | 0 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 250 | 159 | 64* [a] | 161 | 64* [a] | 1 | 70-130/30 |
| | m,p-Xylene | ND | | 500 | 492 | 98 | 464 | 93 | 6 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 250 | 262 | 105 | 244 | 98 | 7 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 750 | 754 | 101 | 708 | 94 | 6 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytieal Batch |
|---|---|---|---|---|---|---|---|
| MC4674-6MS | N56635.D | 5 | 10/27/11 | JP | n/a | n/a | MSN2124 |
| MC4674-6MSD | N56636.D | 5 | 10/27/11 | JP | n/a | n/a | MSN2124 |
| MC4674-6 | N56634.D | 1 | 10/27/11 | JP | n/a | n/a | MSN2124 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4623-3

| CAS No. | Surrogate Recoveries | MS | MSD | MC4674-6 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 95% | 93% | 94% | 70-130% |
| 2037-26-5 | Toluene-D8 | 98% | 97% | 97% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 84% | 85% | 88% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Volatile Internal Standard Area Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSN2124-CC2093 | Injection Date: | 10/27/11 |
| Lab File ID: | N56626.D | Injection Time: | 02:08 |
| Instrument ID: | GCMSN | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 429748 | 9.03 | 622878 | 9.91 | 286249 | 13.16 | 337729 | 15.72 | 111402 | 6.57 |
| Upper Limit [a] | 859496 | 9.53 | 1245756 | 10.41 | 572498 | 13.66 | 675458 | 16.22 | 222804 | 7.07 |
| Lower Limit [b] | 214874 | 8.53 | 311439 | 9.41 | 143125 | 12.66 | 168865 | 15.22 | 55701 | 6.07 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSN2124-BS | 435899 | 9.03 | 634723 | 9.91 | 301050 | 13.16 | 341036 | 15.72 | 106485 | 6.58 |
| MSN2124-BSD | 443137 | 9.03 | 649409 | 9.91 | 301538 | 13.16 | 346571 | 15.72 | 118114 | 6.58 |
| MSN2124-MB | 431803 | 9.03 | 640636 | 9.91 | 279420 | 13.16 | 310493 | 15.72 | 113871 | 6.58 |
| MC4623-3 | 424130 | 9.03 | 621894 | 9.91 | 275764 | 13.16 | 306026 | 15.72 | 102107 | 6.58 |
| ZZZZZZ | 418729 | 9.03 | 611811 | 9.91 | 272964 | 13.16 | 296821 | 15.72 | 103335 | 6.58 |
| ZZZZZZ | 415854 | 9.03 | 603939 | 9.91 | 265469 | 13.16 | 298113 | 15.72 | 101490 | 6.58 |
| MC4674-6 | 405844 | 9.03 | 595099 | 9.91 | 265499 | 13.16 | 292296 | 15.72 | 93768 | 6.58 |
| MC4674-6MS | 413560 | 9.03 | 600006 | 9.91 | 277336 | 13.16 | 334024 | 15.72 | 99434 | 6.58 |
| MC4674-6MSD | 427199 | 9.03 | 628413 | 9.91 | 292375 | 13.16 | 330228 | 15.72 | 105553 | 6.58 |
| ZZZZZZ | 420621 | 9.03 | 617646 | 9.91 | 271667 | 13.16 | 305226 | 15.72 | 106882 | 6.58 |
| ZZZZZZ | 417296 | 9.03 | 607283 | 9.91 | 270871 | 13.16 | 304311 | 15.72 | 103012 | 6.58 |
| ZZZZZZ | 414951 | 9.03 | 605790 | 9.91 | 267753 | 13.16 | 292895 | 15.72 | 97635 | 6.58 |
| ZZZZZZ | 413898 | 9.03 | 607044 | 9.91 | 274560 | 13.16 | 318605 | 15.72 | 104079 | 6.58 |
| ZZZZZZ | 425540 | 9.03 | 621375 | 9.91 | 277687 | 13.16 | 314981 | 15.72 | 111955 | 6.58 |
| ZZZZZZ | 420764 | 9.03 | 615301 | 9.91 | 276755 | 13.16 | 302797 | 15.72 | 104129 | 6.58 |
| ZZZZZZ | 423516 | 9.03 | 617795 | 9.91 | 274991 | 13.16 | 307904 | 15.72 | 115873 | 6.58 |
| ZZZZZZ | 416717 | 9.03 | 612643 | 9.91 | 274705 | 13.16 | 300561 | 15.72 | 127505 | 6.58 |
| ZZZZZZ | 414887 | 9.03 | 603528 | 9.91 | 268151 | 13.16 | 293976 | 15.72 | 103775 | 6.58 |
| ZZZZZZ | 410665 | 9.03 | 599994 | 9.91 | 266398 | 13.16 | 290154 | 15.72 | 103407 | 6.58 |
| ZZZZZZ | 403307 | 9.03 | 593030 | 9.91 | 265033 | 13.16 | 287815 | 15.72 | 95397 | 6.58 |
| ZZZZZZ | 402873 | 9.03 | 594618 | 9.91 | 263461 | 13.16 | 287536 | 15.72 | 92369 | 6.58 |
| ZZZZZZ | 400524 | 9.03 | 591931 | 9.91 | 260443 | 13.16 | 285389 | 15.72 | 103278 | 6.58 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV128-CC126 | Injection Date: | 10/25/11 |
| Lab File ID: | V2878A.D | Injection Time: | 11:18 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 731057 | 6.53 | 1091858 | 7.72 | 636582 | 11.08 | 559635 | 13.31 | 229880 | 3.50 |
| Upper Limit [a] | 1462114 | 7.03 | 2183716 | 8.22 | 1273164 | 11.58 | 1119270 | 13.81 | 459760 | 4.00 |
| Lower Limit [b] | 365529 | 6.03 | 545929 | 7.22 | 318291 | 10.58 | 279818 | 12.81 | 114940 | 3.00 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSV127-BSD | 683854 | 6.53 | 1025966 | 7.72 | 599158 | 11.08 | 525021 | 13.31 | 250852 | 3.50 |
| MSV128-BS | 683854 | 6.53 | 1025966 | 7.72 | 599158 | 11.08 | 525021 | 13.31 | 250852 | 3.50 |
| MSV127-MB | 677302 | 6.54 | 1031911 | 7.73 | 612977 | 11.08 | 556567 | 13.32 | 378859 | 3.51 |
| MSV128-MB | 677302 | 6.54 | 1031911 | 7.73 | 612977 | 11.08 | 556567 | 13.32 | 378859 | 3.51 |
| ZZZZZZ | 662836 | 6.54 | 1003244 | 7.72 | 599830 | 11.08 | 523235 | 13.32 | 354068 | 3.50 |
| ZZZZZZ | 673445 | 6.53 | 1016243 | 7.72 | 605325 | 11.08 | 547061 | 13.32 | 396260 | 3.50 |
| ZZZZZZ | 3948[c] | 6.53 | 5858[c] | 7.72 | 2966[c] | 11.08 | 1715[c] | 13.31 | 0[c] | 0.00* |
| ZZZZZZ | 669354 | 6.54 | 1005229 | 7.72 | 580239 | 11.08 | 493254 | 13.32 | 211531 | 3.50 |
| MC4623-1 | 555019 | 6.53 | 823084 | 7.72 | 472368 | 11.08 | 382812 | 13.32 | 128693 | 3.48 |
| MC4623-2 | 600041 | 6.53 | 922488 | 7.72 | 548967 | 11.08 | 489699 | 13.32 | 272812 | 3.50 |
| ZZZZZZ | 632475 | 6.54 | 950180 | 7.73 | 523914 | 11.08 | 373001 | 13.31 | 321772 | 3.51 |
| ZZZZZZ | 610637 | 6.53 | 924634 | 7.72 | 484275 | 11.08 | 294830 | 13.31 | 308549 | 3.50 |
| ZZZZZZ | 591874 | 6.53 | 923043 | 7.72 | 538711 | 11.08 | 470312 | 13.31 | 284613 | 3.50 |
| MC4771-3 | 633940 | 6.53 | 981398 | 7.72 | 581544 | 11.08 | 490065 | 13.31 | 301776 | 3.49 |
| MC4771-3MS | 648570 | 6.53 | 980179 | 7.72 | 573717 | 11.08 | 476382 | 13.31 | 334466 | 3.50 |
| MC4771-3MSD | 673983 | 6.53 | 1019399 | 7.72 | 596299 | 11.08 | 505898 | 13.31 | 338752 | 3.50 |
| ZZZZZZ | 627144 | 6.53 | 950559 | 7.72 | 533224 | 11.08 | 414465 | 13.31 | 189738 | 3.50 |
| ZZZZZZ | 676130 | 6.53 | 1016005 | 7.72 | 593076 | 11.08 | 527382 | 13.31 | 212212 | 3.50 |
| ZZZZZZ | 651482 | 6.52 | 978071 | 7.72 | 566270 | 11.07 | 501202 | 13.31 | 178505 | 3.49 |
| ZZZZZZ | 621354 | 6.53 | 940616 | 7.72 | 493128 | 11.08 | 301336 | 13.31 | 174309 | 3.49 |
| ZZZZZZ | 622827 | 6.53 | 940376 | 7.72 | 501126 | 11.08 | 317566 | 13.31 | 161560 | 3.49 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Volatile Surrogate Recovery Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Projeet: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC4623-3 | N56631.D | 93.0 | 96.0 | 87.0 |
| MC4674-6MS | N56635.D | 95.0 | 98.0 | 84.0 |
| MC4674-6MSD | N56636.D | 93.0 | 97.0 | 85.0 |
| MSN2124-BS | N56627.D | 92.0 | 99.0 | 85.0 |
| MSN2124-BSD | N56628.D | 93.0 | 97.0 | 85.0 |
| MSN2124-MB | N56630.D | 93.0 | 95.0 | 87.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

5.6.1

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# Volatile Surrogate Recovery Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC4623-1 | V2885.D | 84.0 | 96.0 | 98.0 |
| MC4623-2 | V2886.D | 97.0 | 101.0 | 98.0 |
| MC4771-3MS | V2894.D | 104.0 | 101.0 | 105.0 |
| MC4771-3MSD | V2895.D | 102.0 | 98.0 | 101.0 |
| MSV128-BS | V2879A.D | 101.0 | 101.0 | 101.0 |
| MSV128-MB | V2880A.D | 99.0 | 100.0 | 97.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

New England ACCUTEST LABORATORIES

## GC Volatiles

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## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1353-MB | BH24595.D | 1 | 10/17/11 | WS | n/a | n/a | GBH1353 |

The QC reported here applies to the following samples: Method: SW846 8015

MC4623-1, MC4623-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 0.95 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 90% | 36-148% |

# Blank Spike Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytieal Batch |
|---|---|---|---|---|---|---|---|
| GBH1353-BSP | BH24596.D | 1 | 10/17/11 | WS | n/a | n/a | GBH1353 |

The QC reported here applies to the following samples: Method: SW846 8015

MC4623-1, MC4623-2

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 20.2 | 101 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 92% | 36-148% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4625-6MS | BH24604.D | 1 | 10/17/11 | WS | n/a | n/a | GBH1353 |
| MC4625-6MSD | BH24605.D | 1 | 10/17/11 | WS | n/a | n/a | GBH1353 |
| MC4625-6 | BH24603.D | 1 | 10/17/11 | WS | n/a | n/a | GBH1353 |

The QC reported here applies to the following samples: Method: SW846 8015

MC4623-1, MC4623-2

| CAS No. | Compound | MC4625-6 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 2.53 | | 26.6 | 26.7 | 91 | 26.0 | 88 | 3 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4625-6 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 93% | 89% | 86% | 36-148% |

# Volatile Surrogate Recovery Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC4623-1 | BH24617.D | 87.0 |
| MC4623-2 | BH24618.D | 86.0 |
| GBH1353-BSP | BH24596.D | 92.0 |
| GBH1353-MB | BH24595.D | 90.0 |
| MC4625-6MS | BH24604.D | 93.0 |
| MC4625-6MSD | BH24605.D | 89.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1353-CC1043 | Injection Date: | 10/17/11 |
| Lab File ID: | BH24594.D | Injection Time: | 10:09 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1353-MB | BH24595.D | 10/17/11 | 10:50 | 32.40 |
| GBH1352-MB | BH24595A.D | 10/17/11 | 10:50 | 32.40 |
| GBH1353-BSP | BH24596.D | 10/17/11 | 11:29 | 32.40 |
| MC4249-1 | BH24597.D | 10/17/11 | 12:09 | 32.40 |
| MC4249-1DUP | BH24598.D | 10/17/11 | 12:49 | 32.40 |
| ZZZZZZ | BH24599.D | 10/17/11 | 13:29 | 32.40 |
| ZZZZZZ | BH24600.D | 10/17/11 | 14:09 | 32.40 |
| ZZZZZZ | BH24601.D | 10/17/11 | 14:49 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1352-CC1043 | Injection Date: | 10/17/11 |
| Lab File ID: | BH24594A.D | Injection Time: | 10:09 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1353-MB | BH24595.D | 10/17/11 | 10:50 | 32.40 |
| GBH1352-MB | BH24595A.D | 10/17/11 | 10:50 | 32.40 |
| GBH1353-BSP | BH24596.D | 10/17/11 | 11:29 | 32.40 |
| MC4249-1 | BH24597.D | 10/17/11 | 12:09 | 32.40 |
| MC4249-1DUP | BH24598.D | 10/17/11 | 12:49 | 32.40 |
| ZZZZZZ | BH24599.D | 10/17/11 | 13:29 | 32.40 |
| ZZZZZZ | BH24600.D | 10/17/11 | 14:09 | 32.40 |
| ZZZZZZ | BH24601.D | 10/17/11 | 14:49 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1353-CC1043 | Injection Date: | 10/17/11 |
| Lab File ID: | BH24602.D | Injection Time: | 15:29 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC4625-6 | BH24603.D | 10/17/11 | 16:10 | 32.40 |
| MC4625-6MS | BH24604.D | 10/17/11 | 16:50 | 32.40 |
| MC4625-6MSD | BH24605.D | 10/17/11 | 17:30 | 32.40 |
| ZZZZZZ | BH24606.D | 10/17/11 | 18:10 | 32.40 |
| ZZZZZZ | BH24607.D | 10/17/11 | 18:50 | 32.40 |
| ZZZZZZ | BH24608.D | 10/17/11 | 19:29 | 32.40 |
| ZZZZZZ | BH24609.D | 10/17/11 | 20:09 | 32.40 |
| ZZZZZZ | BH24610.D | 10/17/11 | 20:49 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Cheek Std: | GBH1352-CC1043 | Injection Date: | 10/17/11 |
| Lab File ID: | BH24602A.D | Injection Time: | 15:29 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC4625-6 | BH24603.D | 10/17/11 | 16:10 | 32.40 |
| MC4625-6MS | BH24604.D | 10/17/11 | 16:50 | 32.40 |
| MC4625-6MSD | BH24605.D | 10/17/11 | 17:30 | 32.40 |
| ZZZZZZ | BH24606.D | 10/17/11 | 18:10 | 32.40 |
| ZZZZZZ | BH24607.D | 10/17/11 | 18:50 | 32.40 |
| ZZZZZZ | BH24608.D | 10/17/11 | 19:29 | 32.40 |
| ZZZZZZ | BH24609.D | 10/17/11 | 20:09 | 32.40 |
| ZZZZZZ | BH24610.D | 10/17/11 | 20:49 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1353-CC1043 | Injection Date: | 10/17/11 |
| Lab File ID: | BH24611.D | Injection Time: | 21:29 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| ZZZZZZ | BH24612.D | 10/17/11 | 22:08 | 32.40 |
| ZZZZZZ | BH24613.D | 10/17/11 | 22:48 | 32.40 |
| ZZZZZZ | BH24614.D | 10/17/11 | 23:28 | 32.40 |
| ZZZZZZ | BH24615.D | 10/18/11 | 00:08 | 32.40 |
| ZZZZZZ | BH24616.D | 10/18/11 | 00:47 | 32.40 |
| MC4623-1 | BH24617.D | 10/18/11 | 01:27 | 32.40 |
| MC4623-2 | BH24618.D | 10/18/11 | 02:07 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

New England ACCUTEST LABORATORIES

## GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytieal Bateh |
|---|---|---|---|---|---|---|---|
| OP26617-MB | BG31887.D | 1 | 10/23/11 | KD | 10/17/11 | OP26617 | GBG1151 |

The QC reported here applies to the following samples: Method: SW846-8015

MC4623-1, MC4623-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 16 | 12 | mg/kg | |
| | TPH (>C28-C40) | ND | 16 | 12 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 84-15-1 | o-Terphenyl | 85% | 40-140% |

# Blank Spike Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26617-BS | BG31888.D | 1 | 10/23/11 | KD | 10/17/11 | OP26617 | GBG1151 |

The QC reported here applies to the following samples: Method: SW846-8015

MC4623-1, MC4623-2

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 165 | 168 | 102 | 63-139 |
| | TPH (>C28-C40) | 165 | 121 | 73 | 46-103 |

| CAS No. | Surrogate Recoverics | BSP | Limits |
|---|---|---|---|
| 84-15-1 | o-Terphenyl | 82% | 40-140% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26617-MS | BG31892.D | 1 | 10/23/11 | KD | 10/17/11 | OP26617 | GBG1151 |
| OP26617-MSD | BG31893.D | 1 | 10/23/11 | KD | 10/17/11 | OP26617 | GBG1151 |
| MC4289-1 | BG31894.D | 1 | 10/23/11 | KD | 10/17/11 | OP26617 | GBG1151 |
| MC4289-1 | BG31891.D | 10 | 10/23/11 | KD | 10/17/11 | OP26617 | GBG1151 |

The QC reported here applies to the following samples: Method: SW846-8015

MC4623-1, MC4623-2

| CAS No. | Compound | MC4289-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 3870 [b] | | 189 | 866 | -1588* [a]857 | | -1606* [a]1 | | 8-154/127 |
| | TPH (>C28-C40) | 22.7 | | 189 | 139 | 61 | 144 | 65 | 4 | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4289-1 | MC4289-1 | Limits |
|---|---|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 89% | 93% | 109% | 118% | 40-140% |

(a) Outside control limits due to high level in sample relative to spike amount.
(b) Result is from Run #2.

# Semivolatile Surrogate Recovery Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC4623-1 | BG31890.D | 75.0 |
| MC4623-2 | BG31889.D | 83.0 |
| OP26617-BS | BG31888.D | 82.0 |
| OP26617-MB | BG31887.D | 85.0 |
| OP26617-MS | BG31892.D | 89.0 |
| OP26617-MSD | BG31893.D | 93.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = o-Terphenyl | 40-140% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1151-ICC1151 | Injection Date: | 10/23/11 |
| Lab File ID: | BG31884.D | Injection Time: | 14:50 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 14.03 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26617-MB | BG31887.D | 10/23/11 | 17:11 | 14.04 |
| OP26617-BS | BG31888.D | 10/23/11 | 17:58 | 14.04 |
| MC4623-2 | BG31889.D | 10/23/11 | 18:44 | 14.04 |
| MC4623-1 | BG31890.D | 10/23/11 | 19:31 | 14.04 |
| MC4289-1 | BG31891.D | 10/23/11 | 20:17 | 14.01 |
| OP26617-MS | BG31892.D | 10/23/11 | 21:03 | 14.06 |
| OP26617-MSD | BG31893.D | 10/23/11 | 21:50 | 14.06 |
| MC4289-1 | BG31894.D | 10/23/11 | 22:36 | 14.08 |
| GBG1151-ECC1151 | BG31895.D | 10/23/11 | 23:23 | 14.03 |

Surrogate Compounds

S1 = o-Terphenyl

(a) Retention time from GC signal #1

7.5.1

7

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## General Chemistry

## QC Data Summaries

8

Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC4623
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC4623-1 Analyzed: 18-OCT-11 by HS Method: SM21 2540 B MOD.
ClientID: SUZ-06 (16-18) 101311

| | | |
|---|---|---|
| Wet Weight (Total) | 30.06 | g |
| Tare Weight | 21.352 | g |
| Dry Weight (Total) | 29.129 | g |
| Solids, Percent | 89.3 | % |

Sample: MC4623-2 Analyzed: 18-OCT-11 by HS Method: SM21 2540 B MOD.
ClientID: SUZ-06 (16-18) 10311 DUP

| | | |
|---|---|---|
| Wet Weight (Total) | 27.289 | g |
| Tare Weight | 20.375 | g |
| Dry Weight (Total) | 26.726 | g |
| Solids, Percent | 91.9 | % |

# SVE Install 2011 Data Review

**Laboratory SDG: MC4843**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 1/23/2012**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| VMP-44 (9-10) 102111 | TB 102111 |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS/LCSD recoveries were outside evaluation criteria. Although not indicated in the laboratory case narrative, chloroform was detected in trip blank TB 102111. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 1.9°C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

Yes

| Blank ID | Parameter | Analyte | Concentration |
|---|---|---|---|
| TB 102111 | VOCs | Chloroform | 1.7 ug/L |

Analytical data that were reported non-detect or at concentrations greater than five times (5X) the associated blank concentration did not require qualification.

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| SME2271-BS/BSD | VOCs | Acetone | **320/320** | 0 | 70-130/25 |
| SME2271-BS/BSD | VOCs | Acrolein | **176/166** | 6 | 70-130/25 |
| SME2271-BS/BSD | VOCs | Acrylonitrile | **556/584** | 5 | 70-130/25 |
| SME2271-BS/BSD | VOCs | 2-Butanone (MEK) | **213/224** | 5 | 70-130/25 |
| SME2271-BS/BSD | VOCs | 2-Hexanone | **228/217** | 5 | 70-130/25 |
| SME2271-BS/BSD | VOCs | 4-Methyl-2-pentanone (MIBK) | 130/**132** | 1 | 70-130/25 |
| MSN2130-BS/BSD | VOCs | Acetone | **132**/127 | 4 | 70-130/25 |
| MSN2130-BS/BSD | VOCs | Acrylonitrile | **452/452** | 0 | 70-130/25 |
| MSN2130-BS/BSD | VOCs | 2-Butanone (MEK) | **149/139** | 7 | 70-130/25 |
| MSN2130-BS/BSD | VOCs | 2-Hexanone | **137/132** | 4 | 70-130/25 |
| MSN2130-BS/BSD | VOCs | Methyl tert butyl ether | **131**/130 | 0 | 70-130/25 |

Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS/LCSD MSN2130-BS/BSD was associated with trip blank sample TB 102111. Trip blank samples are quality control samples and are not qualified. No qualification of data was required.

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

No

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

No

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

No

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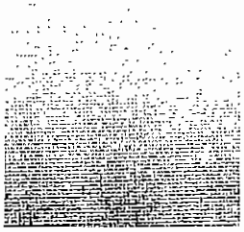
11/23/11





## Technical Report for

## Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC4843

Sampling Date: 10/21/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **56**

Reviewed on 1/23/2012

Reza Tand
Lab Director

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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# Sample Summary

Shell Oil

Job No: MC4843

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| MC4843-1 | 10/21/11 | 11:45 | | 10/22/11 | SO | Soil | VMP-44 (9-10)102111 |
| MC4843-2 | 10/21/11 | 00:00 | | 10/22/11 | AQ | Trip Blank Water | TB 102111 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC4843 |
| **Site:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Ra | **Report Date** | 11/9/2011 3:39:07 PM |

1 Sample(s), 1 Trip Blank were colleeted on 10/21/2011 and were received at Accutest on 10/22/2011 properly preserved, at 1.9 Deg. C and intact. These Samples received an Accutest job number of MC4843. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSN2130

- All samples were analyzed within the recommended method holding time.
- All method blanks for this bateh meet method specific eriteria.
- Sample(s) MC4873-5MS, MC4873-5MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for 2-Butanone (MEK), 2-Hexanone, Acetone, Methyl Tert Butyl Ether are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for Acetone are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MSN2130-BS/BSD/MS/MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.
- BSD Recovery(s) for 2-Butanone (MEK), 2-Hexanone are outside control limits. Blank Spike meets program technical requirements.

**Matrix** SO **Batch ID:** MSE2271

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC4970-1MS, MC4970-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- BS/MS/MSD Recovery(s) for 2-Butanone (MEK), 2-Hexanone, Acetone, Acrolein, Acrylonitrile are outside control limits. Associated samples are non-detect for this compound.
- BSD Recovery(s) for 2-Butanone (MEK), 2-Hexanone, Acetone, Acrolein, Acrylonitrile, 4-Methyl-2-pentanone are outside control limits. Associated samples are non-detect for this compound.
- RPD(s) for MSD for 1,2,3-Trichlorobenzene, 1,4-Dioxane are outside control limits for sample MC4970-1MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- Calibration standard MSE2272-CC2272 utilized the same files as MSE2266-ICC2266.

## Volatiles by GC By Method SW846 8015

**Matrix** SO **Batch ID:** GBH1361

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC4798-1MS, MC4798-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Calibration standard GBH1360-CC1046, GBH1362-CC1046 not associated with this job.

## Extractables by GC By Method SW846-8015

| Matrix SO | Batch ID: OP26775 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC4957-1MS, MC4957-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN36682 |
|---|---|

- Sample(s) MC4843-1DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC4843).

New England ACCUTEST LABORATORIES

3

## Sample Results

Report of Analysis

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-44 (9-10)102111 | | |
| Lab Sample ID: | MC4843-1 | Date Sampled: | 10/21/11 |
| Matrix: | SO - Soil | Date Received: | 10/22/11 |
| Method: | SW846 8260B | Percent Solids: | 87.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | E56508.D | 1 | 11/01/11 | GK | n/a | n/a | MSE2271 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.11 g | 10.0 ml | 25.0 ul |
| Run #2 | | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 2900 | 2900 | ug/kg | |
| 107-02-8 | Acrolein | ND | 15000 | 9900 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 2900 | 1200 | ug/kg | |
| 71-43-2 | Benzene | 248 | 290 | 73 | ug/kg | J |
| 108-86-1 | Bromobenzene | ND | 2900 | 110 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 2900 | 610 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 1200 | 120 | ug/kg | |
| 75-25-2 | Bromoform | ND | 1200 | 280 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 1200 | 400 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 2900 | 700 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 11300 | 2900 | 740 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 3960 | 2900 | 97 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 2900 | 380 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 2900 | 570 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 1200 | 130 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 1200 | 55 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 2900 | 150 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 2900 | 2900 | ug/kg | |
| 67-66-3 | Chloroform | ND | 1200 | 87 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 2900 | 130 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 2900 | 82 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 2900 | 660 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 2900 | 2900 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 1200 | 380 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 1200 | 110 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1200 | 88 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1200 | 85 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1200 | 82 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 1200 | 200 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1200 | 89 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1200 | 85 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1200 | 190 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-44 (9-10)102111 | | |
| Lab Sample ID: | MC4843-1 | Date Sampled: | 10/21/11 |
| Matrix: | SO - Soil | Date Received: | 10/22/11 |
| Method: | SW846 8260B | Percent Solids: | 87.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1200 | 160 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1200 | 150 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 1200 | 130 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 2900 | 680 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 2900 | 110 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 2900 | 110 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 1200 | 590 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 1200 | 400 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 15000 | 15000 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 2900 | 1800 | ug/kg | |
| 100-41-4 | Ethylbenzene | 7860 | 1200 | 76 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 2900 | 2900 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 2900 | 620 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 8570 | 2900 | 93 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | 2910 | 2900 | 95 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1200 | 360 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 2900 | 490 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 2900 | 180 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 1200 | 210 | ug/kg | |
| 91-20-3 | Naphthalene | 17500 | 2900 | 2900 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 16800 | 2900 | 95 | ug/kg | |
| 100-42-5 | Styrene | ND | 2900 | 290 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 2900 | 590 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1200 | 100 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 1200 | 99 | ug/kg | |
| 108-88-3 | Toluene | 618 | 2900 | 100 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | 3020 | 2900 | 650 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 2900 | 2900 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1200 | 110 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1200 | 150 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 1200 | 110 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 1200 | 540 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 2900 | 120 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 24200 | 2900 | 92 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | 8770 | 2900 | 110 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 2900 | 690 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 1200 | 380 | ug/kg | |
| | m,p-Xylene | 11800 | 1200 | 150 | ug/kg | |
| 95-47-6 | o-Xylene | 3850 | 1200 | 110 | ug/kg | |
| 1330-20-7 | Xylene (total) | 15600 | 1200 | 74 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-44 (9-10)102111 | | |
| Lab Sample ID: | MC4843-1 | Date Sampled: | 10/21/11 |
| Matrix: | SO - Soil | Date Received: | 10/22/11 |
| Method: | SW846 8260B | Percent Solids: | 87.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 84% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 120% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-44 (9-10)102111 | | |
| Lab Sample ID: | MC4843-1 | Date Sampled: | 10/21/11 |
| Matrix: | SO - Soil | Date Received: | 10/22/11 |
| Method: | SW846 8015 | Percent Solids: | 87.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24770.D | 1 | 10/25/11 | WS | n/a | n/a | GBH1361 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 4.45 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 2650 | 14 | 2.6 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 80% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-44 (9-10)10211I | | |
| Lab Sample ID: | MC4843-1 | Date Sampled: | 10/21/11 |
| Matrix: | SO - Soil | Date Received: | 10/22/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 87.3 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 I70 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG32041.D | 1 | 11/04/11 | KD | 11/01/11 | OP26775 | GBG1158 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.9 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 839 | 18 | 14 | mg/kg | |
| | TPH (> C28-C40) | 18.5 | 18 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 78% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB 102111 | | |
| Lab Sample ID: | MC4843-2 | Date Sampled: | 10/21/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 10/22/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | N56800.D | 1 | 11/02/11 | JP | n/a | n/a | MSN2130 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | 1.7 | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB 102111 | | |
| Lab Sample ID: | MC4843-2 | Date Sampled: | 10/21/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 10/22/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 5.0 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB 102111 | | |
| Lab Sample ID: | MC4843-2 | Date Sampled: | 10/21/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 10/22/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 89% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 92% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 82% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES

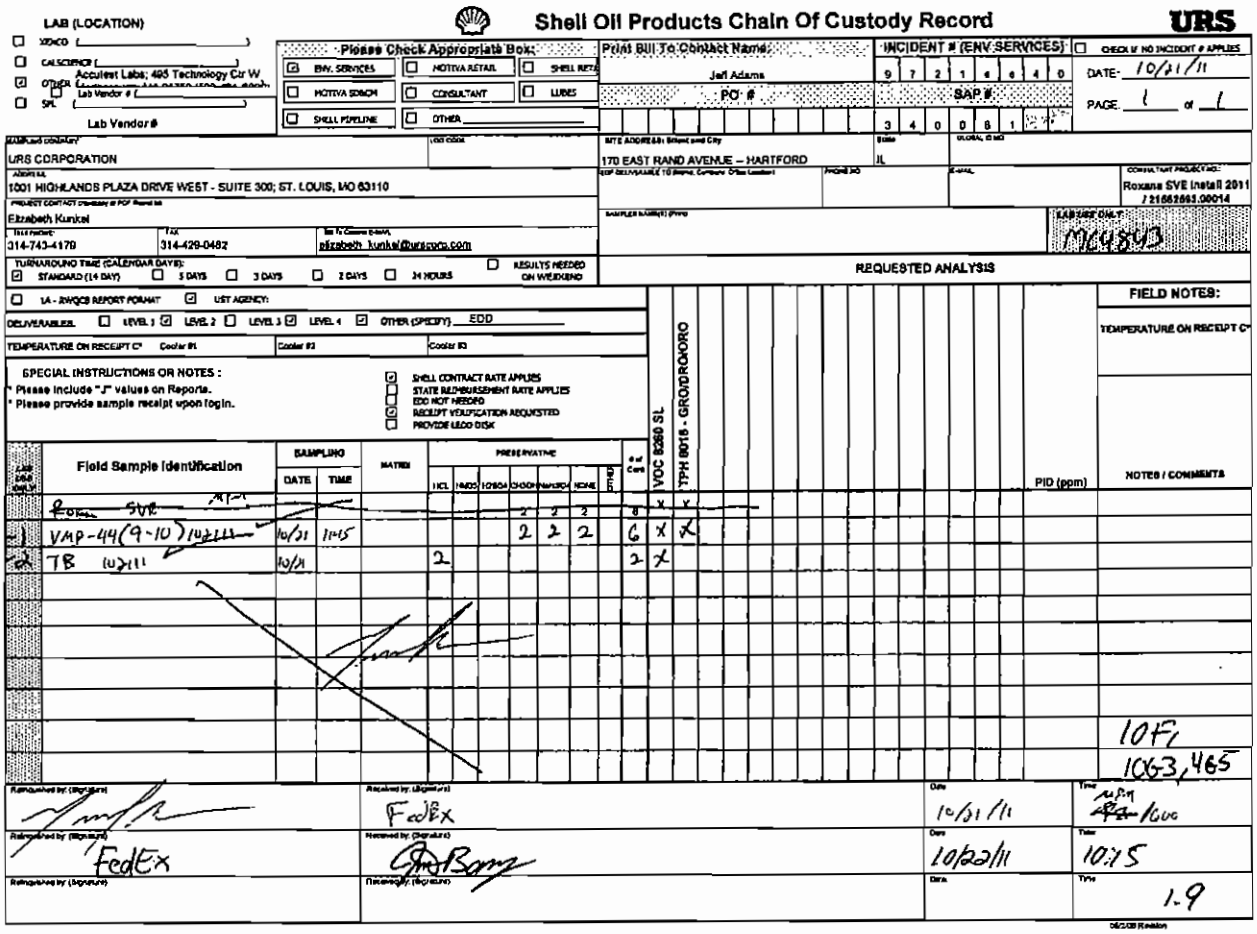


## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



**Shell Oil Products Chain Of Custody Record**

URS

LAB (LOCATION)
☐ XENCO ( )
☐ CALSCIENCE ( )
☑ OTHER ☐ Lab Vendor # ( Accutest Labs; 495 Technology Ctr W )
☐ SPL ( )
Lab Vendor #

Please Check Appropriate Box:
☑ ENV. SERVICES ☐ MOTIVA RETAIL ☐ SHELL RETAIL
☐ MOTIVA BRANCH ☐ CONSULTANT ☐ LUBES
☐ SHELL PIPELINE ☐ OTHER

Print Bill To Contact Name: Jarl Adams
PO #:
INCIDENT # (ENV.SERVICES): 9 7 2 1 4 4 4 0
SAP #: 3 4 0 0 8 1
☐ CHECK IF NO INCIDENT # APPLIES
DATE: 10/21/11
PAGE: 1 of 1

SAMPLING COMPANY: URS CORPORATION
LOG CODE:
SITE ADDRESS: 170 EAST RAND AVENUE – HARTFORD
STATE: IL
GLOBAL ID NO.:
ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300; ST. LOUIS, MO 63110
PHONE NO:
E-MAIL:
CONSULTANT PROJECT NO.: Roxana SVE Install 2011 / 21562663.00014
PROJECT CONTACT (Hardcopy or PDF Report to): Elizabeth Kunkel
TELEPHONE: 314-743-4170
FAX: 314-429-0482
E-mail To: elizabeth.kunkel@urscorp.com
SAMPLER NAME(S) (Print):
LAB WORK ORDER #: MC4843
TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

REQUESTED ANALYSIS

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY:
DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY): EDD
TEMPERATURE ON RECEIPT C° Cooler #1 Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
* Please include "J" values on Reports.
* Please provide sample receipt upon login.
☑ SHELL CONTRACT RATE APPLIES
☐ STATE REIMBURSEMENT RATE APPLIES
☐ EDD NOT NEEDED
☑ RECEIPT VERIFICATION REQUESTED
☐ PROVIDE EDD DISK

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE HCL | HNO3 | ICE | H2SO4 | NaOH | NONE | OTHER | # of Cont | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | ~~Equip. Blank~~ | | | | | | | | | | | | | | | |
| -1 | VMP-44(9-10) | 10/21 | 1145 | | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -2 | TB (0)211 | 10/21 | | | 2 | | | | | | | 2 | X | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | 10F1 |
| | | | | | | | | | | | | | | | | 1063,465 |

FIELD NOTES:
TEMPERATURE ON RECEIPT C°

| Relinquished by: (Signature) | Received by: (Signature) | Date | Time |
|---|---|---|---|
| | FedEx | 10/21/11 | 1600 |
| Relinquished by: (Signature) FedEx | Received by: (Signature) | 10/22/11 | 10:15 |
| Relinquished by: (Signature) | Received by: (Signature) | Date | Time 1.9 |

06/2008 Revision

4.1 4

**MC4843: Chain of Custody**
**Page 1 of 2**

ACCUTEST LABORATORIES

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC4843 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 10/22/2011 Delivery Method: Client Service Action Required at Login: No

Project: 170 EAST RAND AVE HARTFORD IL No. Coolers: 1 Airbill #'s:

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2. Custody Seals Intact: | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification: | Infared gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservatio | Y or N | N/A |
|---|---|---|
| 1. Trip Blank present / cooler: | ☑ ☐ | ☐ |
| 2. Trip Blank listed on COC: | ☑ ☐ | ☐ |
| 3. Samples preserved properly: | ☑ ☐ | |
| 4. VOCs headspace free: | ☑ ☐ | ☐ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles: | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree: | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1. Sample recvd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3. Condition of sample: | Intact |

| Sample Integrity - Instructions | Y or N | N/A |
|---|---|---|
| 1. Analysis requested is clear: | ☑ ☐ | |
| 2. Bottles received for unspecified tests | ☐ ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ ☐ | |
| 4. Compositing instructions clear: | ☐ ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ ☐ | ☑ |

Comments

Accutest Laboratories
V.508.481.6200

495 Technology Center West, Bldg One
F 508 481 7753

Marlborough, MA
www/accutest.com

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4

**MC4843: Chain of Custody**
**Page 2 of 2**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC4843

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC4843-1 | Collected: 21-OCT-11 11:45 By: VMP-44 (9-10)102111 | | Received: 22-OCT-11 | | By: JB | |
| MC4843-1 | SW846 8015 | 25-OCT-11 10:38 | WS | | | V8015GRO |
| MC4843-1 | SM21 2540 B MOD. | 26-OCT-11 | HS | | | %SOL |
| MC4843-1 | SW846 8260B | 01-NOV-11 23:41 | GK | | | V8260SL |
| MC4843-1 | SW846-8015 | 04-NOV-11 19:53 | KD | 01-NOV-11 | AJ | B8015DROORO |
| MC4843-2 | Collected: 21-OCT-11 00:00 By: TB 102111 | | Received: 22-OCT-11 | | By: JB | |
| MC4843-2 | SW846 8260B | 02-NOV-11 16:12 | JP | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 10/22/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC4843-1.1 | Walk In Ref #9 | Hamid Siamak | 10/26/11 08:27 | Retrieve from Storage |
| MC4843-1.1 | Hamid Siamak | Walk In Ref #9 | 10/26/11 09:06 | Return to Storage |
| MC4843-1.1 | Walk In Ref #9 | Bijan Jafari | 10/27/11 06:25 | Retrieve from Storage |
| MC4843-1.1 | Bijan Jafari | Walk In Ref #9 | 10/27/11 08:45 | Return to Storage |
| MC4843-1.1 | Walk In Ref #9 | Francisco Castellanos | 11/01/11 13:17 | Retrieve from Storage |
| MC4843-1.1 | Francisco Castellanos | Walk In Ref #9 | 11/01/11 20:40 | Return to Storage |
| MC4843-1.5 | VOC Ref #10 | William Shao | 10/24/11 14:52 | Retrieve from Storage |
| MC4843-1.5 | William Shao | GCBH | 10/24/11 14:52 | Load on Instrument |
| MC4843-1.5 | GCBH | William Shao | 10/24/11 14:52 | Unload from Instrument |
| MC4843-1.5 | William Shao | VOC Ref #10 | 10/24/11 14:52 | Return to Storage |
| MC4843-1.6 | VOC Ref #10 | Gary Krasinski | 10/26/11 15:37 | Retrieve from Storage |
| MC4843-1.6 | Gary Krasinski | VOC Ref #10 | 11/02/11 11:33 | Return to Storage |
| MC4843-2.1 | VOC Ref #4 | Jugal Patel | 11/02/11 14:06 | Retrieve from Storage |
| MC4843-2.1 | Jugal Patel | GCMSN | 11/02/11 14:06 | Load on Instrument |
| MC4843-2.1 | GCMSN | Jugal Patel | 11/03/11 16:00 | Unload from Instrument |
| MC4843-2.1 | Jugal Patel | VOC Ref #4 | 11/03/11 16:00 | Return to Storage |

New England ACCUTEST LABORATORIES



## GC/MS Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSE2271-MB | E56490.D | 1 | 11/01/11 | GK | n/a | n/a | MSE2271 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4843-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 250 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 850 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 250 | 100 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 6.3 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 9.5 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 52 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 10 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 24 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 34 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 59 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 63 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 8.3 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 33 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 48 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 11 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 4.7 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 13 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 250 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 7.4 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 11 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 7.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 56 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 250 | 250 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 33 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 100 | 9.6 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 7.5 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 7.2 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 7.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 17 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 7.6 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 7.3 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 16 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 13 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 11 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 58 | ug/kg | |

# Method Blank Summary

Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSE2271-MB | E56490.D | 1 | 11/01/11 | GK | n/a | n/a | MSE2271 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4843-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 9.2 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 9.6 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 50 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 34 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 160 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 6.5 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 250 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 52 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 7.9 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.1 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 31 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 42 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 15 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 18 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 250 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 8.1 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 25 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 8.8 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 8.4 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 9.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 55 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 250 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 9.2 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 13 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 9.8 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 46 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 10 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 7.9 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 9.1 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 59 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 32 | ug/kg | |
| | m,p-Xylene | ND | 100 | 13 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 9.2 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 6.3 | ug/kg | |

# Method Blank Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSE2271-MB | E56490.D | 1 | 11/01/11 | GK | n/a | n/a | MSE2271 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4843-1

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 95% | 70-130% |
| 2037-26-5 | Toluene-D8 | 103% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 107% | 70-130% |

# Method Blank Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2130-MB | N56796.D | 1 | 11/02/11 | JP | n/a | n/a | MSN2130 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4843-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |

# Method Blank Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2130-MB | N56796.D | 1 | 11/02/11 | JP | n/a | n/a | MSN2130 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4843-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 5.0 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

# Method Blank Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2130-MB | N56796.D | 1 | 11/02/11 | JP | n/a | n/a | MSN2130 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4843-2

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 88% | 70-130% |
| 2037-26-5 | Toluene-D8 | 92% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 83% | 70-130% |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSE2271-BS | E56487.D | 1 | 11/01/11 | GK | n/a | n/a | MSE2271 |
| MSE2271-BSD | E56488.D | 1 | 11/01/11 | GK | n/a | n/a | MSE2271 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4843-1

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 8000 | 320* a | 7990 | 320* a | 0 | 70-130/25 |
| 107-02-8 | Acrolein | 12500 | 22000 | 176* a | 20700 | 166* a | 6 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 2500 | 13900 | 556* a | 14600 | 584* a | 5 | 70-130/25 |
| 71-43-2 | Benzene | 2500 | 2470 | 99 | 2330 | 93 | 6 | 70-130/25 |
| 108-86-1 | Bromobenzene | 2500 | 2550 | 102 | 2530 | 101 | 1 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 2500 | 2560 | 102 | 2570 | 103 | 0 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 2500 | 2720 | 109 | 2600 | 104 | 5 | 70-130/25 |
| 75-25-2 | Bromoform | 2500 | 2710 | 108 | 2650 | 106 | 2 | 70-130/25 |
| 74-83-9 | Bromomethane | 2500 | 2220 | 89 | 2210 | 88 | 0 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 5330 | 213* a | 5600 | 224* a | 5 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 2500 | 2720 | 109 | 2730 | 109 | 0 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2710 | 108 | 2620 | 105 | 3 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2720 | 109 | 2670 | 107 | 2 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 2500 | 2500 | 100 | 2400 | 96 | 4 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2510 | 100 | 2410 | 96 | 4 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 2500 | 2430 | 97 | 2360 | 94 | 3 | 70-130/25 |
| 75-00-3 | Chloroethane | 2500 | 2380 | 95 | 2330 | 93 | 2 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 3640 | 146 | 3210 | 128 | 13 | 10-160/25 |
| 67-66-3 | Chloroform | 2500 | 2590 | 104 | 2520 | 101 | 3 | 70-130/25 |
| 74-87-3 | Chloromethane | 2500 | 2300 | 92 | 2280 | 91 | 1 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2650 | 106 | 2570 | 103 | 3 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2460 | 98 | 2600 | 104 | 6 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 2500 | 2780 | 111 | 2790 | 112 | 0 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 2500 | 2830 | 113 | 2740 | 110 | 3 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 2500 | 2810 | 112 | 2750 | 110 | 2 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2630 | 105 | 2590 | 104 | 2 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2580 | 103 | 2640 | 106 | 2 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2450 | 98 | 2500 | 100 | 2 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 2330 | 93 | 2250 | 90 | 3 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2610 | 104 | 2510 | 100 | 4 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2860 | 114 | 2710 | 108 | 5 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 2580 | 103 | 2460 | 98 | 5 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2560 | 102 | 2420 | 97 | 6 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2510 | 100 | 2470 | 99 | 2 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2560 | 102 | 2390 | 96 | 7 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2750 | 110 | 2720 | 109 | 1 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSE2271-BS | E56487.D | 1 | 11/01/11 | GK | n/a | n/a | MSE2271 |
| MSE2271-BSD | E56488.D | 1 | 11/01/11 | GK | n/a | n/a | MSE2271 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4843-1

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 2500 | 2560 | 102 | 2450 | 98 | 4 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2520 | 101 | 2380 | 95 | 6 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2680 | 107 | 2620 | 105 | 2 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 3190 | 128 | 3050 | 122 | 4 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 12500 | 15500 | 124 | 13100 | 105 | 17 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2490 | 100 | 2430 | 97 | 2 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 2500 | 2530 | 101 | 2430 | 97 | 4 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2970 | 119 | 3000 | 120 | 1 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 2500 | 5700 | 228* [a] | 5430 | 217* [a] | 5 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 2500 | 2990 | 120 | 2920 | 117 | 2 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2650 | 106 | 2640 | 106 | 0 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2990 | 120 | 2930 | 117 | 2 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 3260 | 130 | 3300 | 132* [a] | 1 | 70-130/25 |
| 74-95-3 | Methylene bromide | 2500 | 2840 | 114 | 2610 | 104 | 8 | 70-130/25 |
| 75-09-2 | Methylene chloride | 2500 | 2770 | 111 | 2650 | 106 | 4 | 70-130/25 |
| 91-20-3 | Naphthalene | 2500 | 2840 | 114 | 2900 | 116 | 2 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 2500 | 2630 | 105 | 2590 | 104 | 2 | 70-130/25 |
| 100-42-5 | Styrene | 2500 | 2600 | 104 | 2550 | 102 | 2 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2560 | 102 | 2490 | 100 | 3 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2900 | 116 | 2930 | 117 | 1 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 2500 | 2280 | 91 | 2310 | 92 | 1 | 70-130/25 |
| 108-88-3 | Toluene | 2500 | 2430 | 97 | 2380 | 95 | 2 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 3220 | 129 | 3230 | 129 | 0 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 3010 | 120 | 3060 | 122 | 2 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2460 | 98 | 2410 | 96 | 2 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2770 | 111 | 2690 | 108 | 3 | 70-130/25 |
| 79-01-6 | Trichloroethene | 2500 | 2360 | 94 | 2150 | 86 | 9 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2410 | 96 | 2340 | 94 | 3 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2900 | 116 | 2960 | 118 | 2 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2680 | 107 | 2640 | 106 | 2 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2540 | 102 | 2520 | 101 | 1 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 2500 | 2050 | 82 | 2030 | 81 | 1 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 2500 | 1970 | 79 | 1930 | 77 | 2 | 70-130/25 |
| | m,p-Xylene | 5000 | 5100 | 102 | 4890 | 98 | 4 | 70-130/25 |
| 95-47-6 | o-Xylene | 2500 | 2530 | 101 | 2430 | 97 | 4 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 7500 | 7630 | 102 | 7320 | 98 | 4 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSE2271-BS | E56487.D | 1 | 11/01/11 | GK | n/a | n/a | MSE2271 |
| MSE2271-BSD | E56488.D | 1 | 11/01/11 | GK | n/a | n/a | MSE2271 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4843-I

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | 94% | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | 95% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 107% | 106% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2130-BS | N56793.D | 1 | 11/02/11 | JP | n/a | n/a | MSN2130 |
| MSN2130-BSD | N56794.D | 1 | 11/02/11 | JP | n/a | n/a | MSN2130 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4843-2

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 66.0 | 132* a | 63.7 | 127 | 4 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 283 | 113 | 297 | 119 | 5 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 226 | 452* b | 226 | 452* b | 0 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 45.6 | 91 | 45.2 | 90 | 1 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 49.5 | 99 | 49.0 | 98 | 1 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 47.4 | 95 | 46.4 | 93 | 2 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 55.8 | 112 | 54.6 | 109 | 2 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 49.4 | 99 | 49.1 | 98 | 1 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 45.9 | 92 | 44.9 | 90 | 2 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 74.5 | 149* a | 69.3 | 139* a | 7 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 50.1 | 100 | 49.2 | 98 | 2 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 49.3 | 99 | 48.5 | 97 | 2 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 49.9 | 100 | 48.3 | 97 | 3 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 44.7 | 89 | 42.9 | 86 | 4 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 62.2 | 124 | 61.0 | 122 | 2 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 50.6 | 101 | 50.1 | 100 | 1 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 42.9 | 86 | 41.5 | 83 | 3 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 44.8 | 90 | 44.5 | 89 | 1 | 70-130/25 |
| 67-66-3 | Chloroform | 50 | 48.7 | 97 | 47.9 | 96 | 2 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 39.4 | 79 | 36.1 | 72 | 9 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 45.8 | 92 | 45.0 | 90 | 2 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 48.1 | 96 | 47.0 | 94 | 2 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 53.8 | 108 | 54.2 | 108 | 1 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 58.3 | 117 | 57.3 | 115 | 2 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 53.0 | 106 | 53.0 | 106 | 0 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 50.3 | 101 | 49.7 | 99 | 1 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 48.7 | 97 | 48.6 | 97 | 0 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 49.5 | 99 | 49.2 | 98 | 1 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 58.2 | 116 | 54.7 | 109 | 6 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 47.3 | 95 | 46.5 | 93 | 2 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 54.9 | 110 | 54.0 | 108 | 2 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 50.6 | 101 | 49.9 | 100 | 1 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 43.1 | 86 | 42.3 | 85 | 2 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 44.9 | 90 | 44.5 | 89 | 1 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 44.8 | 90 | 44.5 | 89 | 1 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 48.6 | 97 | 48.1 | 96 | 1 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2130-BS | N56793.D | 1 | 11/02/11 | JP | n/a | n/a | MSN2130 |
| MSN2130-BSD | N56794.D | 1 | 11/02/11 | JP | n/a | n/a | MSN2130 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4843-2

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 65.1 | 130 | 62.9 | 126 | 3 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 54.2 | 108 | 52.9 | 106 | 2 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 50.2 | 100 | 49.5 | 99 | 1 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 63.9 | 128 | 63.5 | 127 | 1 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 249 | 100 | 245 | 98 | 2 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 45.1 | 90 | 44.9 | 90 | 0 | 77-137/25 |
| 100-41-4 | Ethylbenzene | 50 | 49.9 | 100 | 48.6 | 97 | 3 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 62.1 | 124 | 61.3 | 123 | 1 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 68.5 | 137* [a] | 66.0 | 132* [a] | 4 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 55.3 | 111 | 54.1 | 108 | 2 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 53.4 | 107 | 52.6 | 105 | 2 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 65.4 | 131* [a] | 65.2 | 130 | 0 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 49.2 | 98 | 48.9 | 98 | 1 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 53.4 | 107 | 53.6 | 107 | 0 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 44.9 | 90 | 44.8 | 90 | 0 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 50.3 | 101 | 49.1 | 98 | 2 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 47.1 | 94 | 46.0 | 92 | 2 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 52.9 | 106 | 51.6 | 103 | 2 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 54.5 | 109 | 53.8 | 108 | 1 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 44.4 | 89 | 44.5 | 89 | 0 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 55.3 | 111 | 54.1 | 108 | 2 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 49.5 | 99 | 49.3 | 99 | 0 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 58.9 | 118 | 58.0 | 116 | 2 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 57.9 | 116 | 58.0 | 116 | 0 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 53.4 | 107 | 51.2 | 102 | 4 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 49.5 | 99 | 49.2 | 98 | 1 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 51.8 | 104 | 51.3 | 103 | 1 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 54.5 | 109 | 52.8 | 106 | 3 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 51.8 | 104 | 51.5 | 103 | 1 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 47.5 | 95 | 47.3 | 95 | 0 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 48.5 | 97 | 48.0 | 96 | 1 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 52.8 | 106 | 52.6 | 105 | 0 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 39.5 | 79 | 37.2 | 74 | 6 | 70-130/25 |
| | m,p-Xylene | 100 | 101 | 101 | 99.3 | 99 | 2 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 51.2 | 102 | 50.9 | 102 | 1 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 152 | 101 | 150 | 100 | 1 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2130-BS | N56793.D | 1 | 11/02/11 | JP | n/a | n/a | MSN2130 |
| MSN2130-BSD | N56794.D | 1 | 11/02/11 | JP | n/a | n/a | MSN2130 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4843-2

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 88% | 86% | 70-130% |
| 2037-26-5 | Toluene-D8 | 92% | 92% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 82% | 81% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4970-1MS | E56505.D | 1 | 11/01/11 | GK | n/a | n/a | MSE2271 |
| MC4970-1MSD | E56506.D | 1 | 11/01/11 | GK | n/a | n/a | MSE2271 |
| MC4970-1 | E56501.D | 1 | 11/01/11 | GK | n/a | n/a | MSE2271 |

5.3.1

5

The QC reported here applies to the following samples: Method: SW846 8260B

MC4843-1

| CAS No. | Compound | MC4970-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 4190 | 9520 | 227* [a] | 11000 | 263* [a] | 14 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 20900 | 38400 | 183* [a] | 40500 | 193* [a] | 5 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 4190 | 24100 | 575* [a] | 23700 | 566* [a] | 2 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 4190 | 4150 | 99 | 4200 | 100 | 1 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 4190 | 4620 | 110 | 4370 | 104 | 6 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 4190 | 4340 | 104 | 4250 | 101 | 2 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 4190 | 4480 | 107 | 4720 | 113 | 5 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 4190 | 4550 | 109 | 4460 | 106 | 2 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 4190 | 3910 | 93 | 3880 | 93 | 1 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 4190 | 6890 | 165* [a] | 7800 | 186* [a] | 12 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 4190 | 4490 | 107 | 4710 | 112 | 5 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 4190 | 4600 | 110 | 4770 | 114 | 4 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 4190 | 4630 | 111 | 4680 | 112 | 1 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 4190 | 4100 | 98 | 4330 | 103 | 5 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 4190 | 3970 | 95 | 4030 | 96 | 2 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 4190 | 4160 | 99 | 4310 | 103 | 4 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 4190 | 4060 | 97 | 4140 | 99 | 2 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 4190 | 3460 | 83 | 3880 | 93 | 11 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 4190 | 4390 | 105 | 4460 | 106 | 2 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 4190 | 3920 | 94 | 3990 | 95 | 2 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 4190 | 4740 | 113 | 4830 | 115 | 2 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 4190 | 4630 | 111 | 4720 | 113 | 2 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 4190 | 4710 | 112 | 4120 | 98 | 13 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 4190 | 4590 | 110 | 4790 | 114 | 4 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 4190 | 4720 | 113 | 4660 | 111 | 1 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 4190 | 4310 | 103 | 4510 | 108 | 5 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 4190 | 4580 | 109 | 4480 | 107 | 2 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 4190 | 4330 | 103 | 4240 | 101 | 2 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 4190 | 3800 | 91 | 3900 | 93 | 3 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 4190 | 4340 | 104 | 4590 | 110 | 6 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 4190 | 4730 | 113 | 4800 | 115 | 1 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 4190 | 4260 | 102 | 4520 | 108 | 6 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 4190 | 4400 | 105 | 4490 | 107 | 2 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 4190 | 4360 | 104 | 4460 | 106 | 2 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 4190 | 4150 | 99 | 4420 | 106 | 6 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 4190 | 4620 | 110 | 4630 | 111 | 0 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary

Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4970-1MS | E56505.D | 1 | 11/01/11 | GK | n/a | n/a | MSE2271 |
| MC4970-1MSD | E56506.D | 1 | 11/01/11 | GK | n/a | n/a | MSE2271 |
| MC4970-1 | E56501.D | 1 | 11/01/11 | GK | n/a | n/a | MSE2271 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4843-1

| CAS No. | Compound | MC4970-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 4190 | 3800 | 91 | 3820 | 91 | 1 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 4190 | 4060 | 97 | 4320 | 103 | 6 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 4190 | 4390 | 105 | 4460 | 106 | 2 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 4190 | 5150 | 123 | 5180 | 124 | 1 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 20900 | 17200 | 82 | 25000 | 119 | 37* [b] | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 4190 | 4330 | 103 | 4400 | 105 | 2 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 4190 | 4390 | 105 | 4500 | 107 | 2 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 4190 | 4140 | 99 | 4800 | 115 | 15 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 4190 | 6490 | 155* [a] | 7900 | 189* [a] | 20 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 4190 | 5350 | 128 | 5220 | 125 | 2 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 4190 | 4620 | 110 | 4840 | 116 | 5 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 4190 | 5040 | 120 | 5130 | 122 | 2 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 4190 | 5210 | 124 | 5130 | 122 | 2 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 4190 | 4300 | 103 | 4580 | 109 | 6 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 4190 | 4450 | 106 | 4520 | 108 | 2 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 4190 | 3800 | 91 | 4860 | 116 | 24 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 4190 | 4640 | 111 | 4620 | 110 | 0 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 4190 | 4510 | 108 | 4680 | 112 | 4 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 4190 | 4220 | 101 | 4250 | 101 | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 4190 | 4670 | 111 | 4650 | 111 | 0 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 4190 | 3830 | 91 | 4060 | 97 | 6 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 4190 | 4200 | 100 | 4470 | 107 | 6 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 4190 | 3400 | 81 | 4950 | 118 | 37* [b] | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 4190 | 3850 | 92 | 4810 | 115 | 22 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 4190 | 4060 | 97 | 4320 | 103 | 6 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 4190 | 4470 | 107 | 4490 | 107 | 0 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 4190 | 4000 | 96 | 4290 | 102 | 7 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 4190 | 3910 | 93 | 3970 | 95 | 2 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 4190 | 4720 | 113 | 4870 | 116 | 3 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 4190 | 4610 | 110 | 4780 | 114 | 4 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 4190 | 4530 | 108 | 4500 | 107 | 1 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 4190 | 3180 | 76 | 3110 | 74 | 2 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 4190 | 3240 | 77 | 3450 | 82 | 6 | 70-130/30 |
| | m,p-Xylene | ND | | 8380 | 8750 | 104 | 9200 | 110 | 5 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 4190 | 4360 | 104 | 4430 | 106 | 2 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 12600 | 13100 | 104 | 13600 | 108 | 4 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4970-1MS | E56505.D | 1 | 11/01/11 | GK | n/a | n/a | MSE2271 |
| MC4970-1MSD | E56506.D | 1 | 11/01/11 | GK | n/a | n/a | MSE2271 |
| MC4970-1 | E56501.D | 1 | 11/01/11 | GK | n/a | n/a | MSE2271 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4843-1

| CAS No. | Surrogate Recoveries | MS | MSD | MC4970-1 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 91% | 94% | 94% | 70-130% |
| 2037-26-5 | Toluene-D8 | 99% | 101% | 99% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 108% | 106% | 105% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) High RPD due to possible matrix interference and/or sample non-homogeneity.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4873-5MS | N56814.D | 1 | 11/02/11 | JP | n/a | n/a | MSN2130 |
| MC4873-5MSD | N56815.D | 1 | 11/02/11 | JP | n/a | n/a | MSN2130 |
| MC4873-5 | N56813.D | 1 | 11/02/11 | JP | n/a | n/a | MSN2130 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4843-2

| CAS No. | Compound | MC4873-5 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 50 | 24.9 | 50* [a] | 24.5 | 49* [a] | 2 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 250 | 241 | 96 | 245 | 98 | 2 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 50 | 210 | 420* [b] | 212 | 424* [b] | 1 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 50 | 45.6 | 91 | 44.3 | 89 | 3 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 50 | 47.4 | 95 | 47.6 | 95 | 0 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 50 | 48.0 | 96 | 45.8 | 92 | 5 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 50 | 53.8 | 108 | 53.8 | 108 | 0 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 50 | 48.6 | 97 | 48.1 | 96 | 1 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 50 | 37.1 | 74 | 37.4 | 75 | 1 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 50 | 41.5 | 83 | 41.5 | 83 | 0 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 50 | 47.7 | 95 | 47.1 | 94 | 1 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 50 | 47.8 | 96 | 46.6 | 93 | 3 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 50 | 47.9 | 96 | 46.5 | 93 | 3 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 50 | 43.5 | 87 | 42.4 | 85 | 3 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 50 | 58.2 | 116 | 59.2 | 118 | 2 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 50 | 51.3 | 103 | 49.2 | 98 | 4 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 50 | 43.8 | 88 | 41.3 | 83 | 6 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 50 | 44.4 | 89 | 44.7 | 89 | 1 | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 50 | 49.1 | 98 | 47.7 | 95 | 3 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 50 | 40.1 | 80 | 37.6 | 75 | 6 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 50 | 44.0 | 88 | 43.1 | 86 | 2 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 50 | 46.6 | 93 | 45.6 | 91 | 2 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 50 | 48.0 | 96 | 50.0 | 100 | 4 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 50 | 58.2 | 116 | 57.7 | 115 | 1 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 50 | 52.4 | 105 | 51.0 | 102 | 3 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 50 | 48.7 | 97 | 48.9 | 98 | 0 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 50 | 48.0 | 96 | 47.4 | 95 | 1 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 50 | 48.4 | 97 | 48.0 | 96 | 1 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 50 | 57.2 | 114 | 53.5 | 107 | 7 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 50 | 47.2 | 94 | 45.7 | 91 | 3 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 50 | 53.7 | 107 | 52.9 | 106 | 2 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 50 | 51.5 | 103 | 48.6 | 97 | 6 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 50 | 43.5 | 87 | 42.0 | 84 | 4 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 50 | 45.1 | 90 | 43.2 | 86 | 4 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 50 | 44.4 | 89 | 44.7 | 89 | 1 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 50 | 48.5 | 97 | 46.8 | 94 | 4 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4873-5MS | N56814.D | 1 | 11/02/11 | JP | n/a | n/a | MSN2130 |
| MC4873-5MSD | N56815.D | 1 | 11/02/11 | JP | n/a | n/a | MSN2130 |
| MC4873-5 | N56813.D | 1 | 11/02/11 | JP | n/a | n/a | MSN2130 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4843-2

| CAS No. | Compound | MC4873-5 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 50 | 56.6 | 113 | 56.1 | 112 | 1 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 50 | 52.0 | 104 | 50.8 | 102 | 2 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 50 | 48.1 | 96 | 47.8 | 96 | 1 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 50 | 61.1 | 122 | 61.3 | 123 | 0 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 250 | 234 | 94 | 248 | 99 | 6 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 50 | 41.5 | 83 | 42.8 | 86 | 3 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 50 | 50.5 | 101 | 47.9 | 96 | 5 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 50 | 58.3 | 117 | 59.0 | 118 | 1 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 50 | 41.2 | 82 | 40.2 | 80 | 2 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 50 | 53.3 | 107 | 52.1 | 104 | 2 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 50 | 51.7 | 103 | 50.7 | 101 | 2 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 50 | 62.9 | 126 | 62.8 | 126 | 0 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 50 | 42.6 | 85 | 43.4 | 87 | 2 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 50 | 51.8 | 104 | 51.2 | 102 | 1 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 50 | 45.2 | 90 | 44.1 | 88 | 2 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 50 | 42.6 | 85 | 47.4 | 95 | 11 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 50 | 45.0 | 90 | 44.2 | 88 | 2 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 50 | 53.3 | 107 | 50.6 | 101 | 5 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 50 | 54.6 | 109 | 53.1 | 106 | 3 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 50 | 43.1 | 86 | 42.7 | 85 | 1 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | 1.2 | | 50 | 55.7 | 109 | 53.6 | 105 | 4 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 50 | 48.8 | 98 | 48.2 | 96 | 1 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 50 | 52.3 | 105 | 56.8 | 114 | 8 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 50 | 53.3 | 107 | 55.7 | 111 | 4 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 50 | 51.8 | 104 | 50.7 | 101 | 2 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 50 | 48.4 | 97 | 47.7 | 95 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 50 | 51.0 | 102 | 49.7 | 99 | 3 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 50 | 52.9 | 106 | 50.7 | 101 | 4 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 50 | 48.2 | 96 | 47.8 | 96 | 1 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 50 | 46.7 | 93 | 45.6 | 91 | 2 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 50 | 47.1 | 94 | 46.3 | 93 | 2 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 50 | 46.6 | 93 | 46.9 | 94 | 1 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 50 | 40.5 | 81 | 37.6 | 75 | 7 | 70-130/30 |
| | m,p-Xylene | ND | | 100 | 102 | 102 | 97.7 | 98 | 4 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 50 | 52.2 | 104 | 49.0 | 98 | 6 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 150 | 154 | 103 | 147 | 98 | 5 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4873-5MS | N56814.D | 1 | 11/02/11 | JP | n/a | n/a | MSN2130 |
| MC4873-5MSD | N56815.D | 1 | 11/02/11 | JP | n/a | n/a | MSN2130 |
| MC4873-5 | N56813.D | 1 | 11/02/11 | JP | n/a | n/a | MSN2130 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4843-2

| CAS No. | Surrogate Recoveries | MS | MSD | MC4873-5 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 89% | 89% | 88% | 70-130% |
| 2037-26-5 | Toluene-D8 | 92% | 92% | 91% | 70-130% |
| 460-00-4 | 4-Bromofluorohenzene | 81% | 80% | 81% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Volatile Internal Standard Area Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSE2271-CC2266 | Injection Date: | 11/01/11 |
| Lab File ID: | E56486.D | Injection Time: | 13:24 |
| Instrument ID: | GCMSE | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 229956 | 9.08 | 361200 | 9.95 | 173436 | 13.22 | 139098 | 15.78 | 43705 | 6.60 |
| Upper Limit [a] | 459912 | 9.58 | 722400 | 10.45 | 346872 | 13.72 | 278196 | 16.28 | 87410 | 7.10 |
| Lower Limit [b] | 114978 | 8.58 | 180600 | 9.45 | 86718 | 12.72 | 69549 | 15.28 | 21853 | 6.10 |

| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| MSE2271-BS | 227926 | 9.08 | 356638 | 9.96 | 175465 | 13.22 | 139663 | 15.77 | 43087 | 6.60 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSN2130-CC2093 | Injection Date: | 11/02/11 |
| Lab File ID: | N56792.D | Injection Time: | 12:26 |
| Instrument ID: | GCMSN | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 353148 | 9.03 | 498592 | 9.90 | 237575 | 13.16 | 278244 | 15.72 | 108690 | 6.58 |
| Upper Limit [a] | 706296 | 9.53 | 997184 | 10.40 | 475150 | 13.66 | 556488 | 16.22 | 217380 | 7.08 |
| Lower Limit [b] | 176574 | 8.53 | 249296 | 9.40 | 118788 | 12.66 | 139122 | 15.22 | 54345 | 6.08 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSN2130-BS | 376318 | 9.03 | 535293 | 9.90 | 250134 | 13.16 | 285776 | 15.72 | 130894 | 6.58 |
| MSN2130-BSD | 385987 | 9.03 | 541893 | 9.90 | 253535 | 13.16 | 288539 | 15.72 | 142183 | 6.58 |
| MSN2130-MB | 370542 | 9.03 | 522682 | 9.91 | 234528 | 13.16 | 258076 | 15.72 | 135812 | 6.58 |
| ZZZZZZ | 364737 | 9.03 | 511851 | 9.90 | 232756 | 13.16 | 263481 | 15.72 | 119268 | 6.58 |
| ZZZZZZ | 359660 | 9.03 | 515219 | 9.91 | 227897 | 13.16 | 255644 | 15.72 | 116781 | 6.58 |
| MC4843-2 | 353133 | 9.03 | 497995 | 9.91 | 223487 | 13.16 | 249649 | 15.72 | 110921 | 6.58 |
| ZZZZZZ | 351040 | 9.03 | 496530 | 9.91 | 225289 | 13.16 | 260686 | 15.72 | 104586 | 6.58 |
| ZZZZZZ | 366413 | 9.03 | 515608 | 9.90 | 234540 | 13.16 | 276990 | 15.72 | 118683 | 6.58 |
| ZZZZZZ | 411421 | 9.03 | 573883 | 9.90 | 249523 | 13.16 | 282395 | 15.72 | 122491 | 6.58 |
| ZZZZZZ | 396834 | 9.03 | 565064 | 9.90 | 250738 | 13.16 | 292347 | 15.72 | 116141 | 6.58 |
| ZZZZZZ | 412282 | 9.03 | 573491 | 9.91 | 252784 | 13.16 | 284835 | 15.72 | 126252 | 6.58 |
| ZZZZZZ | 397022 | 9.03 | 553164 | 9.91 | 245794 | 13.16 | 284050 | 15.72 | 112399 | 6.58 |
| ZZZZZZ | 386322 | 9.03 | 544390 | 9.91 | 240456 | 13.16 | 268087 | 15.72 | 116182 | 6.58 |
| ZZZZZZ | 383852 | 9.03 | 538989 | 9.91 | 238298 | 13.16 | 275944 | 15.72 | 105260 | 6.58 |
| ZZZZZZ | 386621 | 9.03 | 553478 | 9.90 | 244959 | 13.16 | 292056 | 15.72 | 111738 | 6.58 |
| ZZZZZZ | 403920 | 9.03 | 574430 | 9.91 | 251074 | 13.16 | 285430 | 15.72 | 125989 | 6.58 |
| ZZZZZZ | 390064 | 9.03 | 547905 | 9.91 | 239557 | 13.16 | 272297 | 15.72 | 116597 | 6.58 |
| ZZZZZZ | 375482 | 9.03 | 529463 | 9.91 | 232955 | 13.16 | 265149 | 15.72 | 109859 | 6.58 |
| MC4873-5 | 368847 | 9.03 | 522597 | 9.91 | 231093 | 13.16 | 259256 | 15.72 | 108007 | 6.58 |
| MC4873-5MS | 375679 | 9.03 | 533284 | 9.90 | 242068 | 13.16 | 290028 | 15.72 | 117941 | 6.58 |
| MC4873-5MSD | 390937 | 9.03 | 551523 | 9.90 | 257987 | 13.16 | 298429 | 15.72 | 124043 | 6.58 |
| ZZZZZZ | 389672 | 9.03 | 542170 | 9.91 | 237380 | 13.16 | 273364 | 15.72 | 121875 | 6.58 |
| ZZZZZZ | 376943 | 9.03 | 531634 | 9.91 | 232296 | 13.16 | 261726 | 15.72 | 102831 | 6.58 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Surrogate Recovery Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC4843-2 | N56800.D | 89.0 | 92.0 | 82.0 |
| MC4873-5MS | N56814.D | 89.0 | 92.0 | 81.0 |
| MC4873-5MSD | N56815.D | 89.0 | 92.0 | 80.0 |
| MSN2130-BS | N56793.D | 88.0 | 92.0 | 82.0 |
| MSN2130-BSD | N56794.D | 86.0 | 92.0 | 81.0 |
| MSN2130-MB | N56796.D | 88.0 | 92.0 | 83.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC4843-1 | E56508.D | 84.0 | 101.0 | 120.0 |
| MC4970-1MS | E56505.D | 91.0 | 99.0 | 108.0 |
| MC4970-1MSD | E56506.D | 94.0 | 101.0 | 106.0 |
| MSE2271-BS | E56487.D | 94.0 | 101.0 | 107.0 |
| MSE2271-BSD | E56488.D | 94.0 | 95.0 | 106.0 |
| MSE2271-MB | E56490.D | 95.0 | 103.0 | 107.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

New England ACCUTEST LABORATORIES

## GC Volatiles



## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike aud Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1361-MB | BH24765.D | 1 | 10/25/11 | WS | n/a | n/a | GBH1361 |

The QC reported here applies to the following samples: Method: SW846 8015

MC4843-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 0.95 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 78% | 36-148% |

# Blank Spike Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1361-BSP | BH24766.D | 1 | 10/25/11 | WS | n/a | n/a | GBH1361 |

The QC reported here applies to the following samples: Method: SW846 8015

MC4843-1

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 23.2 | 116 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 79% | 36-148% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4798-1MS | BH24768.D | 1 | 10/25/11 | WS | n/a | n/a | GBH1361 |
| MC4798-1MSD | BH24769.D | 1 | 10/25/11 | WS | n/a | n/a | GBH1361 |
| MC4798-1 | BH24767.D | 1 | 10/25/11 | WS | n/a | n/a | GBH1361 |

The QC reported here applies to the following samples: Method: SW846 8015

MC4843-1

| CAS No. | Compound | MC4798-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 1.46 | | 25.4 | 22.8 | 84 | 23.8 | 88 | 4 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4798-1 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 76% | 78% | 76% | 36-148% |

6.3.1

6

# Volatile Surrogate Recovery Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC4843-1 | BH24770.D | 80.0 |
| GBH1361-BSP | BH24766.D | 79.0 |
| GBH1361-MB | BH24765.D | 78.0 |
| MC4798-1MS | BH24768.D | 76.0 |
| MC4798-IMSD | BH24769.D | 78.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1360-CC1046 | Injection Date: | 10/25/11 |
| Lab File ID: | BH24763.D | Injection Time: | 06:00 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1361-MB | BH24765.D | 10/25/11 | 07:19 | 32.40 |
| GBH1361-BSP | BH24766.D | 10/25/11 | 07:59 | 32.40 |
| MC4798-1 | BH24767.D | 10/25/11 | 08:38 | 32.40 |
| MC4798-1MS | BH24768.D | 10/25/11 | 09:18 | 32.40 |
| MC4798-1MSD | BH24769.D | 10/25/11 | 09:58 | 32.40 |
| MC4843-1 | BH24770.D | 10/25/11 | 10:38 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

6.5.1 6

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## GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26775-MB | BG32036.D | 1 | 11/04/11 | KD | 11/01/11 | OP26775 | GBG1158 |

The QC reported here applies to the following samples: Method: SW846-8015

MC4843-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 84-15-1 | o-Terphenyl | 90% | 40-140% |

# Blank Spike Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26775-BS | BG32037.D | 1 | 11/04/11 | KD | 11/01/11 | OP26775 | GBG1158 |

The QC reported here applies to the following samples: Method: SW846-8015

MC4843-1

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 165 | 118 | 71 | 63-139 |
| | TPH (>C28-C40) | 165 | 83.2 | 50 | 46-103 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 84-15-1 | o-Terphenyl | 74% | 40-140% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26775-MS | BG32038.D | 1 | 11/04/11 | KD | 11/01/11 | OP26775 | GBG1158 |
| OP26775-MSD | BG32039.D | 1 | 11/04/11 | KD | 11/01/11 | OP26775 | GBG1158 |
| MC4957-1 | BG32040.D | 1 | 11/04/11 | KD | 11/01/11 | OP26775 | GBG1158 |

The QC reported here applies to the following samples: Method: SW846-8015

MC4843-1



| CAS No. | Compound | MC4957-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 193 | 187 | 97 | 139 | 72 | 29 | 8-154/127 |
| | TPH (>C28-C40) | ND | | 193 | 124 | 64 | 102 | 53 | 19 | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4957-1 | Limits |
|---|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 88% | 70% | 76% | 40-140% |

# Semivolatile Surrogate Recovery Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC4843-1 | BG32041.D | 78.0 |
| OP26775-BS | BG32037.D | 74.0 |
| OP26775-MB | BG32036.D | 90.0 |
| OP26775-MS | BG32038.D | 88.0 |
| OP26775-MSD | BG32039.D | 70.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = o-Terphenyl | 40-140% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1159-ICC1159 | Injection Date: | 11/04/11 |
| Lab File ID: | BG32033A.D | Injection Time: | 13:44 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 16.27 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26775-MB | BG32036.D | 11/04/11 | 16:02 | 16.28 |
| OP26775-BS | BG32037.D | 11/04/11 | 16:48 | 16.26 |
| OP26775-MS | BG32038.D | 11/04/11 | 17:35 | 16.27 |
| OP26775-MSD | BG32039.D | 11/04/11 | 18:21 | 16.26 |
| MC4957-1 | BG32040.D | 11/04/11 | 19:07 | 16.26 |
| MC4843-1 | BG32041.D | 11/04/11 | 19:53 | 16.27 |
| GBG1158-ECC115 | BG32042.D | 11/04/11 | 20:39 | 16.27 |

Surrogate Compounds

S1 = o-Terphenyl

(a) Retention time from GC signal #1

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## General Chemistry

## QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC4843
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC4843-1 Analyzed: 26-OCT-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP-44 (9-10)102111

| | | |
|---|---|---|
| Wet Weight (Total) | 28.99 | g |
| Tare Weight | 23.287 | g |
| Dry Weight (Total) | 28.267 | g |
| Solids, Percent | 87.3 | % |

8.1

8

# SVE Install 2011 Data Review

**Laboratory SDG: MC4957**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 1/23/2012**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| P-130 (40-42) 102411 | TB-102411 |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

*Yes,* the laboratory case narrative indicated VOC LCS/LCSD recoveries were outside evaluation criteria. Although not indicated in the laboratory case narrative, acetone was detected in the method blank. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 0.9°C which is outside temperature criteria 4°C ± 2°C. Samples were received in good condition; no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

Yes

| Blank ID | Parameter | Analyte | Concentration |
|---|---|---|---|
| MSV135-MB | VOCs | Acetone | 9.2 ug/L |

Analytical data that required qualification based on blank contamination are in included in the table below. Analytical data that were reported non-detect or at concentrations greater than five times (5X) the associated blank concentration (10X for common laboratory contaminants) did not require qualification.

| Sample ID | Parameter | Analyte | New RL | Qualification |
|---|---|---|---|---|
| P-130 (40-42) 102411 | VOCs | Acetone | 31.5 ug/kg | **U** |

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSV135-BS | VOCs | Acetone | **131** | NA | 70-130 |
| MSV135-BS | VOCs | Acrolein | **138** | NA | 70-130 |
| MSV135-BS | VOCs | Acrylonitrile | **598** | NA | 70-130 |
| MSV135-BS | VOCs | Vinyl acetate | **69** | NA | 70-130 |
| MSN2137-BS/BSD | VOCs | Acrylonitrile | **494/490** | 1 | 70-130/25 |
| MSN2137-BS/BSD | VOCs | 2-Butanone (MEK) | **132**/128 | 3 | 70-130/25 |
| MSN2137-BS/BSD | VOCs | 2,2-Dichloropropane | **139/136** | 2 | 70-130/25 |
| MSN2137-BS/BSD | VOCs | trans-1,3-Dichloropropene | **133**/130 | 2 | 70-130/25 |
| MSN2137-BS/BSD | VOCs | 2-Hexanone | **131**/123 | 6 | 70-130/25 |
| MSN2137-BS/BSD | VOCs | Methyl tert butyl ether | **134/135** | 0 | 70-130/25 |

Analytical data that required qualification based on LSC data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS/LCSD MSN2137-BS/BSD was associated with trip blank sample TB-102411. Trip blank samples are quality control samples and are not qualified.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| P-130 (40-42) 102411 | VOCs | Vinyl acetate | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, although not requested, sample P-130 (40-42) 102411 was spiked and analyzed for TPH-GRO/DRO/ORO.

*Were MS/MSD recoveries within evaluation criteria?*

Yes

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

No

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

No

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11/23/11





## Technical Report for

## Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC4957

Sampling Date: 10/24/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **56**

Reviewed on 1/23/2012

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Reza Rand
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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# Sample Summary

Shell Oil

Job No: MC4957

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|
| MC4957-1 | 10/24/11 | 14:15 | 10/27/11 | SO | Soil | P-130(40-42) 102411 |
| MC4957-2 | 10/24/11 | 00:00 | 10/27/11 | AQ | Trip Blank Water | TB 102411 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC4957 |
| **Site:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Ra | **Report Date** | 11/11/2011 1:24:06 PM |

1 Sample(s), 1 Trip Blank(s) were collected on 10/24/2011 and were reeeived at Accutest on 10/27/2011 properly preserved, at 0.9 Deg. C and intact. These Samples received an Accutest job number of MC4957. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSN2137

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC4988-2MS, MC4988-2MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for 2,2-Dichloropropane, 2-Butanone (MEK), 2-Hexanone, Methyl Tert Butyl Ether, trans-1,3-Dichloropropene are outside control limits. Blank Spike meets program technical requirements.
- MS/MSD Recovery(s) for 2,2-Dichloropropane, Acetone, Bromomethane, Chloromethane, Methyl Tert Butyl Ether, trans-1,3-Dichloropropene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for Bromomethane are outside control limits for sample MC4988-2MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- MSN2137-BS/BSD/MS/MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.
- Blank Spike Duplicate Recovery(s) for 2,2-Dichloropropane, Methyl Tert Butyl Ether, are outside control limits. Blank Spike meets program technical requirements.

**Matrix** SO **Batch ID:** MSV135

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC4942-9MS, MC4942-9MSD were used as the QC samples indicated.
- Sample(s) MC4957-1 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank.
- Blank Spike Recovery(s) for Acetone, Acrolein, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.its. As
- Matrix Spike Recovery(s) for Acrolein, Isopropylbenzene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for Acrolein, Trichloroethene, 1,1,2,2-Tetrachloroethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 1,1,2,2-Tetrachloroethane, Vinyl Acetate are outside control limits for sample MC4942-9MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- MSV135-BS/MS/MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

## Volatiles by GC By Method SW846 8015

**Matrix** SO **Batch ID:** GBH1366

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC4957-1MS, MC4957-1MSD were used as the QC samples indicated.
- Calibration standard GBH1046-ICC1046, GBH1046-ICV1046, GBH1365-CC1046, GBH1367-CC1046 not associated with this job.

## Extractables by GC By Method SW846-8015

| Matrix SO | Batch ID: OP26775 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC4957-1MS, MC4957-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Calibration standard GBG1158-ICC1158 utilized the same files as GBG1159-ICC1159.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN36710 |
|---|---|

- Sample(s) MC4942-27DUP were used as the QC samples for Solids, Pereent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC4957).

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## Sample Results

Report of Analysis

# Report of Analysis



3.1

| | | | |
|---|---|---|---|
| Client Sample ID: | P-130(40-42) 102411 | | |
| Lab Sample ID: | MC4957-1 | Date Sampled: | 10/24/11 |
| Matrix: | SO - Soil | Date Received: | 10/27/11 |
| Method: | SW846 8260B | Percent Solids: | 82.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V3059.D | 1 | 11/03/11 | AMY | n/a | n/a | MSV135 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.73 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~31.5~~ U | ~~6.4~~ 31.5 | 6.4 | ug/kg | B U |
| 107-02-8 | Acrolein | ND | 32 | 22 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6.4 | 2.6 | ug/kg | |
| 71-43-2 | Benzene | 2.1 | 0.64 | 0.16 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 6.4 | 0.24 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6.4 | 1.3 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.6 | 0.27 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.6 | 0.60 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.6 | 0.86 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 6.4 | 1.5 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 6.4 | 1.6 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 6.4 | 0.21 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 6.4 | 0.83 | ug/kg | |
| 75-15-0 | Carbon disulfide | 5.5 | 6.4 | 1.2 | ug/kg | J |
| 56-23-5 | Carbon tetrachloride | ND | 2.6 | 0.29 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.6 | 0.12 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6.4 | 0.33 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6.4 | 6.4 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.6 | 0.19 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6.4 | 0.28 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 6.4 | 0.18 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6.4 | 1.4 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6.4 | 6.4 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.6 | 0.83 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.6 | 0.24 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.6 | 0.19 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.6 | 0.18 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.6 | 0.18 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.6 | 0.44 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.6 | 0.19 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.6 | 0.18 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.6 | 0.41 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | P-130(40-42) 102411 | | |
| Lab Sample ID: | MC4957-1 | Date Sampled: | 10/24/11 |
| Matrix: | SO - Soil | Date Received: | 10/27/11 |
| Method: | SW846 8260B | Percent Solids: | 82.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.6 | 0.35 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.6 | 0.32 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.6 | 0.29 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6.4 | 1.5 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6.4 | 0.24 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6.4 | 0.25 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.6 | 1.3 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.6 | 0.87 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 32 | 32 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6.4 | 4.0 | ug/kg | |
| 100-41-4 | Ethylbenzene | 6.0 | 2.6 | 0.17 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 6.4 | 6.4 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6.4 | 1.3 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 6.4 | 0.20 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 6.4 | 0.21 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.6 | 0.79 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6.4 | 1.1 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6.4 | 0.39 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.6 | 0.46 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 6.4 | 6.4 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 6.4 | 0.21 | ug/kg | |
| 100-42-5 | Styrene | ND | 6.4 | 0.64 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6.4 | 1.3 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.6 | 0.22 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.6 | 0.21 | ug/kg | |
| 108-88-3 | Toluene | 6.0 | 6.4 | 0.23 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6.4 | 1.4 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6.4 | 6.4 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.6 | 0.23 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.6 | 0.32 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.6 | 0.25 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.6 | 1.2 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6.4 | 0.27 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.2 | 6.4 | 0.20 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 6.4 | 0.23 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 6.4 | 1.5 | ug/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 2.6 | 0.82 | ug/kg | |
| | m,p-Xylene | 1.6 | 2.6 | 0.32 | ug/kg | J |
| 95-47-6 | o-Xylene | 0.74 | 2.6 | 0.24 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 2.4 | 2.6 | 0.16 | ug/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | P-130(40-42) 102411 | | |
| Lab Sample ID: | MC4957-1 | Date Sampled: | 10/24/11 |
| Matrix: | SO - Soil | Date Received: | 10/27/11 |
| Method: | SW846 8260B | Percent Solids: | 82.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 | 170 East Rand Ave. Hartford, IL | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 105% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | P-130(40-42) 102411 | | |
| Lab Sample ID: | MC4957-1 | Date Sampled: | 10/24/11 |
| Matrix: | SO - Soil | Date Received: | 10/27/11 |
| Method: | SW846 8015 | Percent Solids: | 82.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24846.D | 1 | 10/28/11 | WS | n/a | n/a | GBH1366 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.95 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 16 | 3.1 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 79% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | P-130(40-42) 102411 | | |
| Lab Sample ID: | MC4957-1 | Date Sampled: | 10/24/11 |
| Matrix: | SO - Soil | Date Received: | 10/27/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 82.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG32040.D | 1 | 11/04/11 | KD | 11/01/11 | OP26775 | GBG1158 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.9 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 19 | 14 | mg/kg | |
| | TPH (>C28-C40) | ND | 19 | 14 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 76% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | TB 102411 | | |
| Lab Sample ID: | MC4957-2 | Date Sampled: | 10/24/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 10/27/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | N56994.D | 1 | 11/07/11 | JP | n/a | n/a | MSN2137 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

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N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | TB 102411 | | |
| Lab Sample ID: | MC4957-2 | Date Sampled: | 10/24/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 10/27/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 5.0 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | TB 102411 | | |
| **Lab Sample ID:** | MC4957-2 | **Date Sampled:** | 10/24/11 |
| **Matrix:** | AQ - Trip Blank Water | **Date Received:** | 10/27/11 |
| **Method:** | SW846 8260B | **Percent Solids:** | n/a |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 90% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 92% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 84% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

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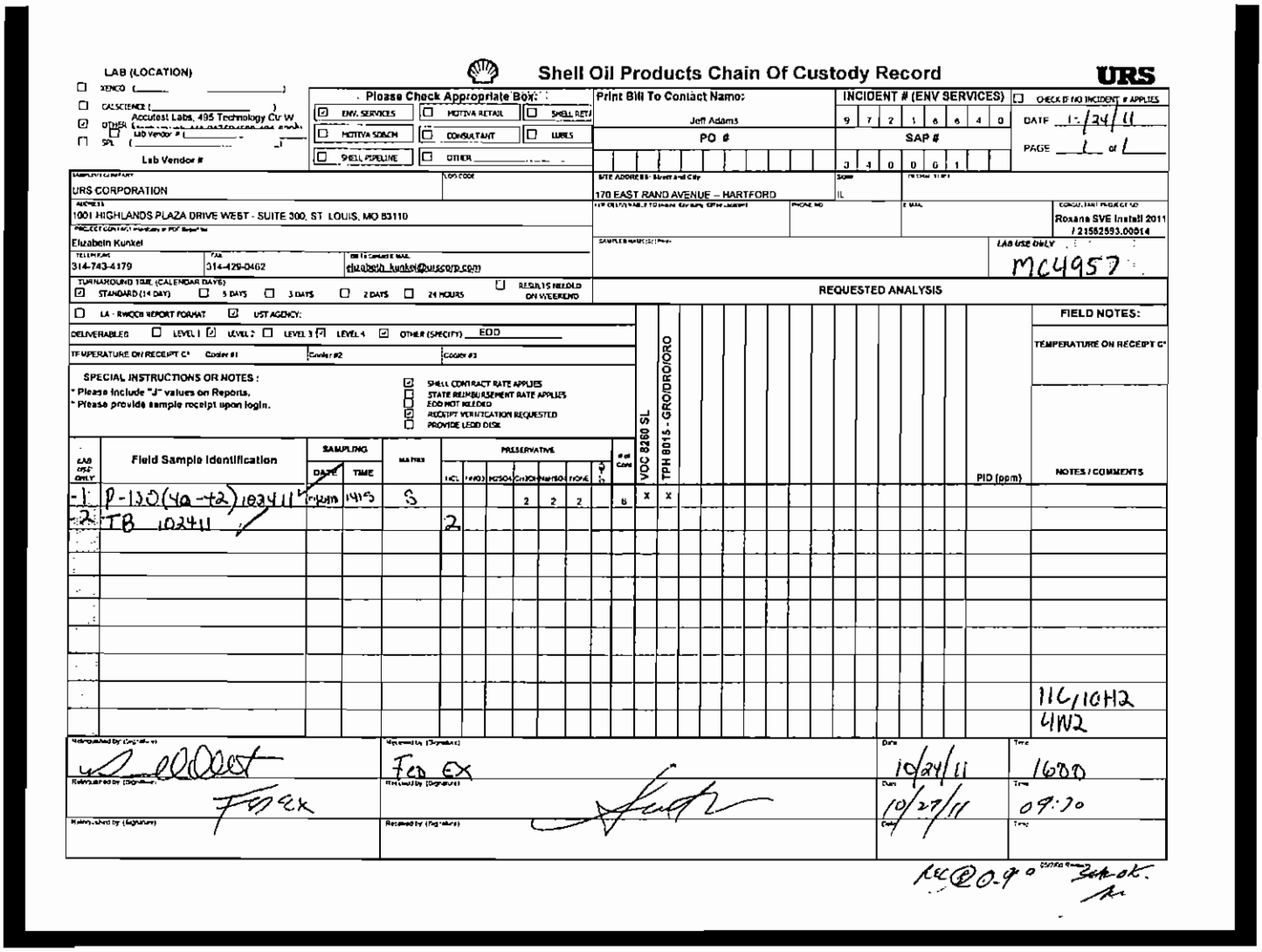
## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



LAB (LOCATION)
☐ XENCO (_____)
☐ CALSCIENCE (_____)
☑ OTHER Accutest Labs, 495 Technology Ctr W.
☐ SPL (_____)
Lab Vendor #

Shell Oil Products Chain Of Custody Record

URS

Please Check Appropriate Box:
☑ ENV. SERVICES ☐ MOTIVA RETAIL ☐ SHELL RETAIL
☐ MOTIVA SOACH ☐ CONSULTANT ☐ LUBES
☐ SHELL PIPELINE ☐ OTHER

Print Bill To Contact Name: Jeff Adams
PO #
INCIDENT # (ENV SERVICES) 9 7 2 1 6 6 4 0 ☐ CHECK IF NO INCIDENT # APPLIES
SAP # 3 4 0 0 0 0 1
DATE 10/24/11
PAGE 1 of 1

COMPANY NAME: URS CORPORATION
LOG CODE
ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110
PROJECT CONTACT (Hardcopy or PDF Report to): Elizabeth Kunkel
TELEPHONE: 314-743-4179
FAX: 314-429-0462
E-MAIL TO: elizabeth.kunkel@urscorp.com
TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND
SITE ADDRESS: Street and City: 170 EAST RAND AVENUE – HARTFORD
STATE: IL
PHONE NO
E-MAIL
CONSULTANT PROJECT NO: Roxana SVE Install 2011 / 21582593.00014
SAMPLER NAME(S) Print: LAB USE ONLY MC4957

REQUESTED ANALYSIS

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY:
DELIVERABLES ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD
TEMPERATURE ON RECEIPT C° Cooler #1 Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
* Please include "J" values on Reports.
* Please provide sample receipt upon login.

☑ SHELL CONTRACT RATE APPLIES
☐ STATE REIMBURSEMENT RATE APPLIES
☐ EDD NOT NEEDED
☑ RECEIPT VERIFICATION REQUESTED
☐ PROVIDE EDD DISK

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE HCL | H2SO4 | HNO3 | ICE | HARRISON | NONE | # of Cont | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | P-120(4a-t2)102411 | 10/24/11 | 1415 | S | | | | 2 | 2 | 2 | 6 | X | X | | |
| -2 | TB 102411 | | | | 2 | | | | | | | | | | |

FIELD NOTES:
TEMPERATURE ON RECEIPT C°

11C/10H2
4N2

| Relinquished by (Signature) | Received by (Signature) | Date | Time |
|---|---|---|---|
| | Fed Ex | 10/24/11 | 1600 |
| Fed Ex | | 10/29/11 | 09:30 |
| | | | |

rec@0.9° 2ck ok.

4.1.4

**MC4957: Chain of Custody**
**Page 1 of 2**

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC4957 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 10/27/2011 Delivery Method: Client Service Action Required at Login: No

Project: 170 EAST RAND AVE HARTFORD IL No. Coolers: 1 Airbill #'s:

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2. Custody Seals Intact: | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification: | Infared gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservatio | Y or N | N/A |
|---|---|---|
| 1. Trip Blank present / cooler: | ☑ ☐ | ☐ |
| 2. Trip Blank listed on COC: | ☑ ☐ | ☐ |
| 3. Samples preserved properly: | ☑ ☐ | |
| 4. VOCs headspace free: | ☑ ☐ | ☐ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles: | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree: | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1. Sample recvd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3. Condition of sample: | Intact |

| Sample Integrity - Instructions | Y or N | N/A |
|---|---|---|
| 1. Analysis requested is clear: | ☑ ☐ | |
| 2. Bottles received for unspecified tests | ☐ ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ ☐ | |
| 4. Compositing instructions clear: | ☐ ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ ☐ | ☑ |

Comments



**MC4957: Chain of Custody**
**Page 2 of 2**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC4957

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC4957-1 | Collected: 24-OCT-11 14:15 By: P-130(40-42) 102411 | | Received: 27-OCT-11 | | By: JB | |
| MC4957-1 | SM21 2540 B MOD. | 28-OCT-11 | HS | | | %SOL |
| MC4957-1 | SW846 8015 | 28-OCT-11 04:36 | WS | | | V8015GRO |
| MC4957-1 | SW846 8260B | 03-NOV-11 13:29 | AMY | | | V8260SL |
| MC4957-1 | SW846-8015 | 04-NOV-11 19:07 | KD | 01-NOV-11 | AJ | B8015DROORO |
| MC4957-2 | Collected: 24-OCT-11 00:00 By: TB 102411 | | Received: 27-OCT-11 | | By: JB | |
| MC4957-2 | SW846 8260B | 07-NOV-11 13:56 | JP | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 10/27/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC4957-1.1 | Walk In Ref #9 | Hamid Siamak | 10/28/11 08:39 | Retrieve from Storage |
| MC4957-1.1 | Hamid Siamak | Walk In Ref #9 | 10/28/11 11:38 | Return to Storage |
| MC4957-1.1 | Walk In Ref #9 | Francisco Castellanos | 11/01/11 13:17 | Retrieve from Storage |
| MC4957-1.1 | Francisco Castellanos | Walk In Ref #9 | 11/01/11 20:40 | Return to Storage |
| MC4957-1.3 | VOC Ref #10 | Amy Min Yang | 11/03/11 09:49 | Retrieve from Storage |
| MC4957-1.3 | Amy Min Yang | GCMSV | 11/03/11 09:49 | Load on Instrument |
| MC4957-1.3 | GCMSV | Amy Min Yang | 11/14/11 07:40 | Unload from Instrument |
| MC4957-1.3 | Amy Min Yang | VOC Ref #10 | 11/14/11 07:40 | Return to Storage |
| MC4957-1.5 | VOC Ref #10 | William Shao | 10/27/11 15:59 | Retrieve from Storage |
| MC4957-1.5 | William Shao | VOC Ref #10 | 10/28/11 10:08 | Return to Storage |
| MC4957-1.6 | VOC Ref #10 | Gary Krasinski | 10/29/11 11:20 | Retrieve from Storage |
| MC4957-1.6 | Gary Krasinski | VOC Ref #10 | 11/01/11 08:41 | Return to Storage |
| MC4957-2.1 | VOC Ref #4 | Jugal Patel | 11/07/11 12:01 | Retrieve from Storage |
| MC4957-2.1 | Jugal Patel | GCMSN | 11/07/11 12:01 | Load on Instrument |
| MC4957-2.1 | GCMSN | Jugal Patel | 11/08/11 12:06 | Unload from Instrument |
| MC4957-2.1 | Jugal Patel | VOC Ref #4 | 11/08/11 12:06 | Return to Storage |

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## GC/MS Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV135-MB | V3052.D | 1 | 11/03/11 | AMY | n/a | n/a | MSV135 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4957-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-I | Acetone | 9.2 | 5.0 | 5.0 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV135-MB | V3052.D | 1 | 11/03/11 | AMY | n/a | n/a | MSV135 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4957-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV135-MB | V3052.D | 1 | 11/03/11 | AMY | n/a | n/a | MSV135 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4957-1

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 103% | 70-130% |
| 2037-26-5 | Toluene-D8 | 100% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | 70-130% |

# Method Blank Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2137-MB | N56992.D | 1 | 11/07/11 | JP | n/a | n/a | MSN2137 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4957-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dihromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |

# Method Blank Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2137-MB | N56992.D | 1 | 11/07/11 | JP | n/a | n/a | MSN2137 |



The QC reported here applies to the following samples: Mcthod: SW846 8260B

MC4957-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 5.0 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ng/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

# Method Blank Summary

Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2137-MB | N56992.D | 1 | 11/07/11 | JP | n/a | n/a | MSN2137 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4957-2

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 89% | 70-130% |
| 2037-26-5 | Toluene-D8 | 92% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 84% | 70-130% |

# Blank Spike Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV135-BS | V3051.D | 1 | 11/03/11 | AMY | n/a | n/a | MSV135 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4957-1

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 65.3 | 131* [a] | 70-130 |
| 107-02-8 | Acrolein | 250 | 344 | 138* [a] | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 299 | 598* [b] | 70-130 |
| 71-43-2 | Benzene | 50 | 53.5 | 107 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 52.7 | 105 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 54.1 | 108 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 51.7 | 103 | 70-130 |
| 75-25-2 | Bromoform | 50 | 46.5 | 93 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 55.1 | 110 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 53.0 | 106 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 55.4 | 111 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 55.0 | 110 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 55.6 | 111 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 48.9 | 98 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 59.5 | 119 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 52.4 | 105 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 53.1 | 106 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 42.6 | 85 | 10-160 |
| 67-66-3 | Chloroform | 50 | 55.9 | 112 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 50.0 | 100 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 52.4 | 105 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 53.3 | 107 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 45.9 | 92 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 51.2 | 102 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 54.9 | 110 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 53.5 | 107 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 52.2 | 104 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 51.4 | 103 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 55.3 | 111 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 55.0 | 110 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 56.7 | 113 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 55.9 | 112 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 53.4 | 107 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 54.4 | 109 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 54.0 | 108 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 52.6 | 105 | 70-130 |

# Blank Spike Summary

Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV135-BS | V3051.D | 1 | 11/03/11 | AMY | n/a | n/a | MSV135 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4957-1

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 49.6 | 99 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 55.3 | 111 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 49.8 | 100 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 51.5 | 103 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 244 | 98 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 48.3 | 97 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 54.4 | 109 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 54.1 | 108 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 53.1 | 106 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 60.9 | 122 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 56.3 | 113 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 55.0 | 110 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 52.1 | 104 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 55.8 | 112 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 51.7 | 103 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 53.3 | 107 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 54.7 | 109 | 70-130 |
| 100-42-5 | Styrene | 50 | 55.5 | 111 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 58.1 | 116 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 52.0 | 104 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 52.2 | 104 | 70-130 |
| 108-88-3 | Toluene | 50 | 54.0 | 108 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 53.1 | 106 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 53.6 | 107 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 51.7 | 103 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 54.1 | 108 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 54.6 | 109 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 55.7 | 111 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 47.2 | 94 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 54.3 | 109 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 53.6 | 107 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 34.7 | 69* a | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 45.1 | 90 | 70-130 |
| | m,p-Xylene | 100 | 107 | 107 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 55.0 | 110 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 162 | 108 | 70-130 |

# Blank Spike Summary

Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV135-BS | V3051.D | 1 | 11/03/11 | AMY | n/a | n/a | MSV135 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4957-1

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 103% | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 104% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2137-BS | N56989.D | 1 | 11/07/11 | JP | n/a | n/a | MSN2137 |
| MSN2137-BSD | N56990.D | 1 | 11/07/11 | JP | n/a | n/a | MSN2137 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4957-2

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 61.2 | 122 | 57.9 | 116 | 6 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 324 | 130 | 315 | 126 | 3 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 247 | 494* a | 245 | 490* a | 1 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 45.8 | 92 | 45.3 | 91 | 1 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 48.1 | 96 | 47.8 | 96 | 1 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 47.4 | 95 | 46.0 | 92 | 3 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 54.4 | 109 | 53.6 | 107 | 1 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 54.0 | 108 | 53.2 | 106 | 1 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 42.1 | 84 | 43.7 | 87 | 4 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 66.1 | 132* b | 63.9 | 128 | 3 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 49.1 | 98 | 48.3 | 97 | 2 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 48.6 | 97 | 47.1 | 94 | 3 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 47.1 | 94 | 45.9 | 92 | 3 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 44.9 | 90 | 44.3 | 89 | 1 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 62.3 | 125 | 60.7 | 121 | 3 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 50.0 | 100 | 48.8 | 98 | 2 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 45.6 | 91 | 44.5 | 89 | 2 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 47.2 | 94 | 46.3 | 93 | 2 | 70-130/25 |
| 67-66-3 | Chloroform | 50 | 46.5 | 93 | 46.6 | 93 | 0 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 40.3 | 81 | 38.6 | 77 | 4 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 44.9 | 90 | 44.2 | 88 | 2 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 47.3 | 95 | 46.4 | 93 | 2 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 56.1 | 112 | 52.4 | 105 | 7 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 61.4 | 123 | 61.9 | 124 | 1 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 52.5 | 105 | 51.9 | 104 | 1 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 48.4 | 97 | 48.1 | 96 | 1 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 47.2 | 94 | 47.1 | 94 | 0 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 48.1 | 96 | 47.5 | 95 | 1 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 49.1 | 98 | 47.9 | 96 | 2 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 47.5 | 95 | 47.8 | 96 | 1 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 50.0 | 100 | 49.4 | 99 | 1 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 51.3 | 103 | 51.0 | 102 | 1 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 42.7 | 85 | 42.4 | 85 | 1 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 45.8 | 92 | 45.3 | 91 | 1 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 47.2 | 94 | 46.3 | 93 | 2 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 48.1 | 96 | 48.3 | 97 | 0 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary

Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2137-BS | N56989.D | 1 | 11/07/11 | JP | n/a | n/a | MSN2137 |
| MSN2137-BSD | N56990.D | 1 | 11/07/11 | JP | n/a | n/a | MSN2137 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4957-2

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 69.6 | 139* b | 68.0 | 136* b | 2 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 51.6 | 103 | 50.6 | 101 | 2 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 51.6 | 103 | 50.8 | 102 | 2 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 66.3 | 133* b | 65.0 | 130 | 2 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 271 | 108 | 247 | 99 | 9 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 47.1 | 94 | 45.4 | 91 | 4 | 77-137/25 |
| 100-41-4 | Ethylbenzene | 50 | 48.5 | 97 | 47.8 | 96 | 1 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 55.5 | 111 | 53.7 | 107 | 3 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 65.3 | 131* b | 61.5 | 123 | 6 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 54.4 | 109 | 53.9 | 108 | 1 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 51.4 | 103 | 50.5 | 101 | 2 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 67.2 | 134* b | 67.3 | 135* b | 0 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 52.8 | 106 | 49.6 | 99 | 6 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 50.7 | 101 | 50.4 | 101 | 1 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 45.5 | 91 | 46.0 | 92 | 1 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 48.3 | 97 | 47.3 | 95 | 2 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 46.6 | 93 | 45.8 | 92 | 2 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 51.1 | 102 | 50.6 | 101 | 1 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 55.7 | 111 | 55.4 | 111 | 1 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 47.3 | 95 | 46.4 | 93 | 2 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 51.1 | 102 | 51.0 | 102 | 0 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 48.8 | 98 | 47.5 | 95 | 3 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 54.7 | 109 | 54.2 | 108 | 1 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 54.9 | 110 | 54.3 | 109 | 1 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 50.2 | 100 | 50.1 | 100 | 0 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 48.4 | 97 | 47.4 | 95 | 2 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 48.7 | 97 | 47.5 | 95 | 2 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 48.8 | 98 | 48.1 | 96 | 1 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 56.2 | 112 | 54.9 | 110 | 2 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 46.5 | 93 | 46.2 | 92 | 1 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 47.5 | 95 | 46.5 | 93 | 2 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 61.2 | 122 | 58.7 | 117 | 4 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 39.1 | 78 | 38.8 | 78 | 1 | 70-130/25 |
| | m,p-Xylene | 100 | 98.0 | 98 | 97.4 | 97 | 1 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 50.0 | 100 | 49.1 | 98 | 2 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 148 | 99 | 147 | 98 | 1 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2137-BS | N56989.D | 1 | 11/07/11 | JP | n/a | n/a | MSN2137 |
| MSN2137-BSD | N56990.D | 1 | 11/07/11 | JP | n/a | n/a | MSN2137 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4957-2

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 87% | 89% | 70-130% |
| 2037-26-5 | Toluene-D8 | 92% | 92% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 83% | 83% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits. Blank Spike meets program technical requirements.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4942-9MS | V3072.D | 1 | 11/03/11 | AMY | n/a | n/a | MSV135 |
| MC4942-9MSD | V3073.D | 1 | 11/03/11 | AMY | n/a | n/a | MSV135 |
| MC4942-9 | V3060.D | 1 | 11/03/11 | AMY | n/a | n/a | MSV135 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4957-1

| CAS No. | Compound | MC4942-9 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 10.9 | B | 97.3 | 110 | 102 | 107 | 114 | 3 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 486 | 903 | 186* [a] | 840 | 200* [a] | 7 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 97.3 | 589 | 605* [b] | 469 | 558* [b] | 23 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 97.3 | 103 | 106 | 85.3 | 101 | 19 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 97.3 | 101 | 104 | 84.3 | 100 | 18 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 97.3 | 101 | 104 | 83.4 | 99 | 19 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 97.3 | 95.2 | 98 | 77.8 | 93 | 20 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 97.3 | 88.5 | 91 | 72.3 | 86 | 20 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 97.3 | 106 | 109 | 84.9 | 101 | 22 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 97.3 | 104 | 107 | 87.3 | 104 | 17 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 97.3 | 104 | 107 | 85.1 | 101 | 20 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 97.3 | 108 | 111 | 89.8 | 107 | 18 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 97.3 | 110 | 113 | 91.8 | 109 | 18 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 97.3 | 97.0 | 100 | 78.2 | 93 | 21 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 97.3 | 115 | 118 | 93.1 | 111 | 21 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 97.3 | 103 | 106 | 84.1 | 100 | 20 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 97.3 | 105 | 108 | 83.6 | 99 | 23 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 97.3 | 64.6 | 66 | 53.7 | 64 | 18 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 97.3 | 104 | 107 | 85.0 | 101 | 20 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 97.3 | 97.0 | 100 | 75.9 | 90 | 24 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 97.3 | 102 | 105 | 84.6 | 101 | 19 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 97.3 | 103 | 106 | 85.0 | 101 | 19 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 97.3 | 89.3 | 92 | 73.8 | 88 | 19 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 97.3 | 97.4 | 100 | 79.8 | 95 | 20 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 97.3 | 108 | 11I | 88.5 | 105 | 20 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 97.3 | 96.6 | 99 | 78.9 | 94 | 20 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 97.3 | 98.0 | 101 | 79.9 | 95 | 20 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 97.3 | 95.8 | 98 | 77.7 | 92 | 21 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 97.3 | 113 | 116 | 89.7 | 107 | 23 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 97.3 | 105 | 108 | 85.1 | 101 | 21 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 97.3 | 104 | 107 | 84.9 | 101 | 20 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 97.3 | 115 | 118 | 93.1 | 111 | 21 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 97.3 | 103 | 106 | 83.6 | 99 | 21 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 97.3 | 108 | 111 | 87.4 | 104 | 21 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 97.3 | 101 | 104 | 83.8 | 100 | 19 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 97.3 | 103 | 106 | 84.6 | 101 | 20 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4942-9MS | V3072.D | 1 | 11/03/11 | AMY | n/a | n/a | MSV135 |
| MC4942-9MSD | V3073.D | 1 | 11/03/11 | AMY | n/a | n/a | MSV135 |
| MC4942-9 | V3060.D | 1 | 11/03/11 | AMY | n/a | n/a | MSV135 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4957-1

| CAS No. | Compound | MC4942-9 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 97.3 | 90.8 | 93 | 74.9 | 89 | 19 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 97.3 | 111 | 114 | 89.0 | 106 | 22 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 97.3 | 90.3 | 93 | 74.3 | 88 | 19 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 97.3 | 94.7 | 97 | 77.3 | 92 | 20 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 486 | 466 | 96 | 403 | 96 | 14 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 97.3 | 84.6 | 87 | 68.3 | 81 | 21 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 97.3 | 108 | 111 | 88.9 | 106 | 19 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 97.3 | 92.1 | 95 | 72.7 | 86 | 24 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 97.3 | 106 | 109 | 91.1 | 108 | 15 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 97.3 | 128 | 132* [a] | 107 | 127 | 18 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 97.3 | 110 | 113 | 91.7 | 109 | 18 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 97.3 | 100 | 103 | 83.0 | 99 | 19 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 97.3 | 103 | 106 | 87.1 | 104 | 17 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 97.3 | 104 | 107 | 86.0 | 102 | 19 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 97.3 | 100 | 103 | 81.5 | 97 | 20 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 97.3 | 92.4 | 95 | 70.9 | 84 | 26 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 97.3 | 109 | 112 | 91.4 | 109 | 18 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 97.3 | 107 | 110 | 86.4 | 103 | 21 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 97.3 | 110 | 113 | 90.9 | 108 | 19 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 97.3 | 98.3 | 101 | 47.6 | 57* [a] | 69* [c] | 70-130/30 |
| 127-18-4 | Tetrachloroethene | 0.84 | J | 97.3 | 108 | 110 | 88.2 | 104 | 20 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 97.3 | 104 | 107 | 85.2 | 101 | 20 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 97.3 | 80.5 | 83 | 59.4 | 71 | 30 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 97.3 | 84.5 | 87 | 62.9 | 75 | 29 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 97.3 | 98.2 | 101 | 80.4 | 96 | 20 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 97.3 | 99.0 | 102 | 82.9 | 99 | 18 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 97.3 | 113 | 116 | 125 | 149* [a] | 10 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 97.3 | 107 | 110 | 84.8 | 101 | 23 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 97.3 | 94.6 | 97 | 80.0 | 95 | 17 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 97.3 | 104 | 107 | 86.6 | 103 | 18 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 97.3 | 105 | 108 | 87.4 | 104 | 18 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 97.3 | 91.1 | 94 | 61.7 | 73 | 38* [c] | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 97.3 | 86.5 | 89 | 67.4 | 80 | 25 | 70-130/30 |
| | m,p-Xylene | ND | | 195 | 213 | 109 | 175 | 104 | 20 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 97.3 | 107 | 110 | 88.5 | 105 | 19 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 292 | 320 | 110 | 263 | 104 | 20 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Bateh |
|---|---|---|---|---|---|---|---|
| MC4942-9MS | V3072.D | 1 | 11/03/11 | AMY | n/a | n/a | MSV135 |
| MC4942-9MSD | V3073.D | 1 | 11/03/11 | AMY | n/a | n/a | MSV135 |
| MC4942-9 | V3060.D | 1 | 11/03/11 | AMY | n/a | n/a | MSV135 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4957-1

| CAS No. | Surrogate Recoveries | MS | MSD | MC4942-9 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | 95% | 100% | 70-130% |
| 2037-26-5 | Toluene-D8 | 100% | 98% | 99% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 106% | 106% | 102% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.
(c) High RPD due to possible matrix interference and/or sample non-homogeneity.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4988-2MS | N57000.D | 5 | 11/07/11 | JP | n/a | n/a | MSN2137 |
| MC4988-2MSD | N57001.D | 5 | 11/07/11 | JP | n/a | n/a | MSN2137 |
| MC4988-2 | N56999.D | 1 | 11/07/11 | JP | n/a | n/a | MSN2137 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4957-2

| CAS No. | Compound | MC4988-2 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 250 | 131 | 52* [a] | 128 | 51* [a] | 2 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 1250 | 1450 | 116 | 1500 | 120 | 3 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 250 | 1260 | 504* [b] | 1310 | 524* [b] | 4 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 250 | 233 | 93 | 227 | 91 | 3 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 250 | 240 | 96 | 241 | 96 | 0 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 250 | 230 | 92 | 229 | 92 | 0 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 250 | 271 | 108 | 265 | 106 | 2 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 250 | 259 | 104 | 265 | 106 | 2 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 250 | 106 | 42* [a] | 165 | 66* [a] | 44* [c] | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 250 | 225 | 90 | 234 | 94 | 4 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 250 | 252 | 101 | 244 | 98 | 3 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 250 | 247 | 99 | 241 | 96 | 2 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 250 | 239 | 96 | 235 | 94 | 2 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 250 | 236 | 94 | 226 | 90 | 4 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 250 | 302 | 121 | 298 | 119 | 1 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 250 | 250 | 100 | 245 | 98 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 250 | 233 | 93 | 223 | 89 | 4 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 250 | 243 | 97 | 234 | 94 | 4 | 70-130/30 |
| 67-66-3 | Chloroform | 2.4 | | 250 | 245 | 97 | 236 | 93 | 4 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 250 | 163 | 65* [a] | 173 | 69* [a] | 6 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 250 | 229 | 92 | 224 | 90 | 2 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 250 | 241 | 96 | 235 | 94 | 3 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 250 | 268 | 107 | 277 | 111 | 3 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 250 | 300 | 120 | 301 | 120 | 0 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 250 | 261 | 104 | 261 | 104 | 0 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 250 | 248 | 99 | 242 | 97 | 2 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 250 | 240 | 96 | 238 | 95 | 1 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 250 | 242 | 97 | 241 | 96 | 0 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 250 | 253 | 101 | 246 | 98 | 3 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 250 | 252 | 101 | 243 | 97 | 4 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 250 | 252 | 101 | 248 | 99 | 2 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 250 | 264 | 106 | 253 | 101 | 4 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 250 | 224 | 90 | 216 | 86 | 4 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 250 | 236 | 94 | 227 | 91 | 4 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 250 | 243 | 97 | 234 | 94 | 4 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 250 | 244 | 98 | 240 | 96 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4988-2MS | N57000.D | 5 | 11/07/11 | JP | n/a | n/a | MSN2137 |
| MC4988-2MSD | N57001.D | 5 | 11/07/11 | JP | n/a | n/a | MSN2137 |
| MC4988-2 | N56999.D | 1 | 11/07/11 | JP | n/a | n/a | MSN2137 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4957-2

| CAS No. | Compound | MC4988-2 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 250 | 349 | 140* [a] | 341 | 136* [a] | 2 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 250 | 268 | 107 | 253 | 101 | 6 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 250 | 259 | 104 | 256 | 102 | 1 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 250 | 328 | 131* [a] | 327 | 131* [a] | 0 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 1250 | 1310 | 105 | 1320 | 106 | 1 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 250 | 242 | 97 | 241 | 96 | 0 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 250 | 246 | 98 | 239 | 96 | 3 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 250 | 273 | 109 | 275 | 110 | 1 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 250 | 244 | 98 | 249 | 100 | 2 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 250 | 276 | 110 | 273 | 109 | 1 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 250 | 264 | 106 | 258 | 103 | 2 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 250 | 339 | 136* [a] | 341 | 136* [a] | 1 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 250 | 251 | 100 | 259 | 104 | 3 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 250 | 258 | 103 | 252 | 101 | 2 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 250 | 239 | 96 | 232 | 93 | 3 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 250 | 237 | 95 | 248 | 99 | 5 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 250 | 238 | 95 | 232 | 93 | 3 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 250 | 258 | 103 | 252 | 101 | 2 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 250 | 276 | 110 | 271 | 108 | 2 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 250 | 237 | 95 | 242 | 97 | 2 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 250 | 260 | 104 | 250 | 100 | 4 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 250 | 245 | 98 | 239 | 96 | 2 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 250 | 274 | 110 | 277 | 111 | 1 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 250 | 270 | 108 | 273 | 109 | 1 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 250 | 262 | 105 | 252 | 101 | 4 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 250 | 247 | 99 | 247 | 99 | 0 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 250 | 248 | 99 | 239 | 96 | 4 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 250 | 253 | 101 | 240 | 96 | 5 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 250 | 274 | 110 | 282 | 113 | 3 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 250 | 238 | 95 | 234 | 94 | 2 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 250 | 242 | 97 | 235 | 94 | 3 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 250 | 315 | 126 | 316 | 126 | 0 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 250 | 193 | 77 | 192 | 77 | 1 | 70-130/30 |
| | m,p-Xylene | 1.3 | | 500 | 503 | 100 | 484 | 97 | 4 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 250 | 253 | 101 | 246 | 98 | 3 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 1.3 | | 750 | 755 | 100 | 730 | 97 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4988-2MS | N57000.D | 5 | 11/07/11 | JP | n/a | n/a | MSN2137 |
| MC4988-2MSD | N57001.D | 5 | 11/07/11 | JP | n/a | n/a | MSN2137 |
| MC4988-2 | N56999.D | 1 | 11/07/11 | JP | n/a | n/a | MSN2137 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC4957-2

| CAS No. | Surrogate Recoveries | MS | MSD | MC4988-2 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 90% | 89% | 88% | 70-130% |
| 2037-26-5 | Toluene-D8 | 93% | 93% | 92% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 83% | 84% | 84% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.
(c) High RPD due to possible matrix interference and/or sample non-homogeneity.

# Volatile Internal Standard Area Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSN2137-CC2093 | Injection Date: | 11/07/11 |
| Lab File ID: | N56988.D | Injection Time: | 11:07 |
| Instrument ID: | GCMSN | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 340296 | 9.03 | 492099 | 9.90 | 225884 | 13.16 | 247735 | 15.72 | 126074 | 6.57 |
| Upper Limit [a] | 680592 | 9.53 | 984198 | 10.40 | 451768 | 13.66 | 495470 | 16.22 | 252148 | 7.07 |
| Lower Limit [b] | 170148 | 8.53 | 246050 | 9.40 | 112942 | 12.66 | 123868 | 15.22 | 63037 | 6.07 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSN2137-BS | 347671 | 9.03 | 500978 | 9.90 | 230887 | 13.16 | 253802 | 15.72 | 133380 | 6.57 |
| MSN2137-BSD | 348164 | 9.03 | 509687 | 9.90 | 230940 | 13.16 | 252438 | 15.72 | 128275 | 6.58 |
| MSN2137-MB | 336521 | 9.03 | 494313 | 9.91 | 216807 | 13.16 | 235710 | 15.72 | 126745 | 6.58 |
| ZZZZZZ | 335752 | 9.03 | 486082 | 9.90 | 212435 | 13.16 | 233834 | 15.72 | 128847 | 6.58 |
| MC4957-2 | 321843 | 9.03 | 473650 | 9.91 | 209058 | 13.16 | 230751 | 15.72 | 116889 | 6.58 |
| ZZZZZZ | 319052 | 9.03 | 469640 | 9.90 | 207477 | 13.16 | 222572 | 15.72 | 118973 | 6.58 |
| ZZZZZZ | 328656 | 9.03 | 479494 | 9.91 | 215779 | 13.16 | 243773 | 15.72 | 126446 | 6.58 |
| ZZZZZZ | 330014 | 9.03 | 483221 | 9.91 | 219515 | 13.16 | 252866 | 15.72 | 117383 | 6.58 |
| ZZZZZZ | 345945 | 9.03 | 498352 | 9.91 | 219985 | 13.16 | 245414 | 15.72 | 137818 | 6.58 |
| MC4988-2 | 341117 | 9.03 | 499401 | 9.91 | 217731 | 13.16 | 242670 | 15.72 | 128089 | 6.58 |
| MC4988-2MS | 342079 | 9.03 | 500816 | 9.91 | 230619 | 13.16 | 252100 | 15.72 | 129509 | 6.57 |
| MC4988-2MSD | 346237 | 9.03 | 508888 | 9.90 | 235934 | 13.16 | 256243 | 15.72 | 138883 | 6.57 |
| ZZZZZZ | 340961 | 9.03 | 498077 | 9.90 | 218810 | 13.16 | 238896 | 15.72 | 127330 | 6.58 |
| ZZZZZZ | 338170 | 9.03 | 493490 | 9.91 | 217953 | 13.16 | 237781 | 15.72 | 115392 | 6.58 |
| ZZZZZZ | 332792 | 9.03 | 489391 | 9.91 | 215209 | 13.16 | 236429 | 15.72 | 116382 | 6.58 |
| ZZZZZZ | 335087 | 9.03 | 489683 | 9.90 | 231869 | 13.16 | 274058 | 15.72 | 125547 | 6.58 |
| ZZZZZZ | 370053 | 9.03 | 532292 | 9.90 | 231876 | 13.16 | 261694 | 15.72 | 142959 | 6.58 |
| ZZZZZZ | 364637 | 9.03 | 525774 | 9.91 | 229481 | 13.16 | 255406 | 15.72 | 119120 | 6.58 |
| ZZZZZZ | 352195 | 9.03 | 513210 | 9.90 | 223410 | 13.16 | 247176 | 15.72 | 128359 | 6.58 |
| ZZZZZZ | 343795 | 9.03 | 496233 | 9.91 | 221130 | 13.16 | 249517 | 15.72 | 131451 | 6.58 |
| ZZZZZZ | 350866 | 9.03 | 506981 | 9.90 | 228192 | 13.16 | 255904 | 15.72 | 132734 | 6.58 |
| ZZZZZZ | 355311 | 9.03 | 517874 | 9.90 | 228102 | 13.16 | 253434 | 15.72 | 121514 | 6.58 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV135-CC126 | Injection Date: | 11/03/11 |
| Lab File ID: | V3050.D | Injection Time: | 08:53 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 688656 | 6.52 | 1022720 | 7.71 | 634627 | 11.07 | 563581 | 13.30 | 224500 | 3.49 |
| Upper Limit [a] | 1377312 | 7.02 | 2045440 | 8.21 | 1269254 | 11.57 | 1127162 | 13.80 | 449000 | 3.99 |
| Lower Limit [b] | 344328 | 6.02 | 511360 | 7.21 | 317314 | 10.57 | 281791 | 12.80 | 112250 | 2.99 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSV135-BS | 658751 | 6.52 | 987662 | 7.71 | 607653 | 11.07 | 541656 | 13.30 | 228370 | 3.50 |
| MSV135-MB | 622096 | 6.52 | 960923 | 7.71 | 606628 | 11.07 | 555987 | 13.31 | 366986 | 3.49 |
| ZZZZZZ | 624847 | 6.53 | 963440 | 7.72 | 606222 | 11.07 | 552831 | 13.31 | 317492 | 3.50 |
| ZZZZZZ | 629902 | 6.52 | 971687 | 7.71 | 608321 | 11.07 | 557321 | 13.30 | 355929 | 3.49 |
| ZZZZZZ | 622332 | 6.52 | 961380 | 7.71 | 604018 | 11.07 | 554657 | 13.31 | 355576 | 3.50 |
| ZZZZZZ | 622172 | 6.53 | 953628 | 7.72 | 591836 | 11.07 | 534696 | 13.31 | 188165 | 3.50 |
| ZZZZZZ | 628689 | 6.53 | 949752 | 7.72 | 591576 | 11.07 | 533693 | 13.31 | 209453 | 3.50 |
| ZZZZZZ | 568447 | 6.53 | 877735 | 7.72 | 465211 | 11.07 | 250368[c] | 13.31 | 182586 | 3.51 |
| MC4957-1 | 629200 | 6.53 | 976935 | 7.72 | 636169 | 11.07 | 552253 | 13.31 | 338465 | 3.50 |
| MC4942-9 | 617372 | 6.53 | 944489 | 7.72 | 577979 | 11.07 | 529630 | 13.31 | 238281 | 3.50 |
| ZZZZZZ | 597491 | 6.53 | 915208 | 7.72 | 549315 | 11.07 | 478273 | 13.31 | 176129 | 3.49 |
| ZZZZZZ | 638154 | 6.54 | 975733 | 7.72 | 619762 | 11.08 | 562036 | 13.31 | 240900 | 3.51 |
| ZZZZZZ | 392236 | 6.54 | 603895 | 7.72 | 368919 | 11.08 | 327984 | 13.31 | 133989 | 3.50 |
| ZZZZZZ | 618066 | 6.54 | 944113 | 7.72 | 585079 | 11.08 | 530721 | 13.31 | 213664 | 3.50 |
| ZZZZZZ | 508721 | 6.53 | 773943 | 7.72 | 477353 | 11.08 | 415965 | 13.31 | 157947 | 3.50 |
| ZZZZZZ | 560822 | 6.54 | 860353 | 7.72 | 500468 | 11.08 | 362877 | 13.31 | 203023 | 3.51 |
| ZZZZZZ | 566237 | 6.54 | 863444 | 7.73 | 524657 | 11.08 | 399435 | 13.31 | 175913 | 3.50 |
| ZZZZZZ | 666198 | 6.54 | 1019616 | 7.72 | 608259 | 11.08 | 553586 | 13.31 | 207763 | 3.50 |
| ZZZZZZ | 672850 | 6.53 | 1028359 | 7.72 | 615863 | 11.08 | 535202 | 13.31 | 215687 | 3.50 |
| MC4942-9MS | 664027 | 6.53 | 988892 | 7.72 | 576038 | 11.08 | 502992 | 13.31 | 222746 | 3.51 |
| MC4942-9MSD | 655942 | 6.53 | 969107 | 7.72 | 564313 | 11.08 | 479152 | 13.31 | 235425 | 3.50 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Volatile Surrogate Recovery Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC4957-2 | N56994.D | 90.0 | 92.0 | 84.0 |
| MC4988-2MS | N57000.D | 90.0 | 93.0 | 83.0 |
| MC4988-2MSD | N57001.D | 89.0 | 93.0 | 84.0 |
| MSN2137-BS | N56989.D | 87.0 | 92.0 | 83.0 |
| MSN2137-BSD | N56990.D | 89.0 | 92.0 | 83.0 |
| MSN2137-MB | N56992.D | 89.0 | 92.0 | 84.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC4957-1 | V3059.D | 100.0 | 101.0 | 105.0 |
| MC4942-9MS | V3072.D | 99.0 | 100.0 | 106.0 |
| MC4942-9MSD | V3073.D | 95.0 | 98.0 | 106.0 |
| MSV135-BS | V3051.D | 103.0 | 101.0 | 104.0 |
| MSV135-MB | V3052.D | 103.0 | 100.0 | 101.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

New England ACCUTEST LABORATORIES

# GC Volatiles

6

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1366-MB | BH24844.D | 1 | 10/28/11 | WS | n/a | n/a | GBH1366 |



The QC reported here applies to the following samples: Method: SW846 8015

MC4957-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 0.95 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 79% | 36-148% |

# Blank Spike Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1366-BSP | BH24845.D | 1 | 10/28/11 | WS | n/a | n/a | GBH1366 |

The QC reported here applies to the following samples: Method: SW846 8015

MC4957-1

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 20 | 18.8 | 94 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 78% | 36-148% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC4957-1MS | BH24847.D | 1 | 10/28/11 | WS | n/a | n/a | GBH1366 |
| MC4957-1MSD | BH24848.D | 1 | 10/28/11 | WS | n/a | n/a | GBH1366 |
| MC4957-1 | BH24846.D | 1 | 10/28/11 | WS | n/a | n/a | GBH1366 |

The QC reported here applies to the following samples: Method: SW846 8015

MC4957-1

| CAS No. | Compound | MC4957-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 65.4 | 62.2 | 95 | 60.0 | 92 | 4 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4957-1 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 79% | 79% | 79% | 36-148% |

6.3.1

6

# Volatile Surrogate Recovery Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Method: SW846 8015 | Matrix: SO |
|---|---|

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC4957-1 | BH24846.D | 79.0 |
| GBH1366-BSP | BH24845.D | 78.0 |
| GBH1366-MB | BH24844.D | 79.0 |
| MC4957-1MS | BH24847.D | 79.0 |
| MC4957-1MSD | BH24848.D | 79.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1365-CC1046 | Injection Date: | 10/28/11 |
| Lab File ID: | BH24842.D | Injection Time: | 01:58 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1366-MB | BH24844.D | 10/28/11 | 03:17 | 32.40 |
| GBH1366-BSP | BH24845.D | 10/28/11 | 03:57 | 32.40 |
| MC4957-1 | BH24846.D | 10/28/11 | 04:36 | 32.40 |
| MC4957-1MS | BH24847.D | 10/28/11 | 05:15 | 32.40 |
| MC4957-1MSD | BH24848.D | 10/28/11 | 05:55 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

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## GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26775-MB | BG32036.D | 1 | 11/04/11 | KD | 11/01/11 | OP26775 | GBG1158 |

The QC reported here applies to the following samples: Method: SW846-8015

MC4957-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 84-15-1 | o-Terphenyl | 90% | 40-140% |

# Blank Spike Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26775-BS | BG32037.D | 1 | 11/04/11 | KD | 11/01/11 | OP26775 | GBG1158 |

The QC reported here applies to the following samples: Method: SW846-8015

MC4957-1

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 165 | 118 | 71 | 63-139 |
| | TPH (>C28-C40) | 165 | 83.2 | 50 | 46-103 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 84-15-1 | o-Terphenyl | 74% | 40-140% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26775-MS | BG32038.D | 1 | 11/04/11 | KD | 11/01/11 | OP26775 | GBG1158 |
| OP26775-MSD | BG32039.D | 1 | 11/04/11 | KD | 11/01/11 | OP26775 | GBG1158 |
| MC4957-1 | BG32040.D | I | 11/04/11 | KD | 11/01/11 | OP26775 | GBG1158 |

The QC reported here applies to the following samples: Method: SW846-8015

MC4957-1



| CAS No. | Compound | MC4957-1 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 193 | 187 | 97 | 139 | 72 | 29 | 8-154/127 |
| | TPH (>C28-C40) | ND | | 193 | 124 | 64 | 102 | 53 | 19 | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC4957-1 | Limits |
|---|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 88% | 70% | 76% | 40-140% |

# Semivolatile Surrogate Recovery Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC4957-1 | BG32040.D | 76.0 |
| OP26775-BS | BG32037.D | 74.0 |
| OP26775-MB | BG32036.D | 90.0 |
| OP26775-MS | BG32038.D | 88.0 |
| OP26775-MSD | BG32039.D | 70.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = o-Terphenyl | 40-140% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1159-ICC1159 | Injection Date: | 11/04/11 |
| Lab File ID: | BG32033A.D | Injection Time: | 13:44 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 16.27 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26775-MB | BG32036.D | 11/04/11 | 16:02 | 16.28 |
| OP26775-BS | BG32037.D | 11/04/11 | 16:48 | 16.26 |
| OP26775-MS | BG32038.D | 11/04/11 | 17:35 | 16.27 |
| OP26775-MSD | BG32039.D | 11/04/11 | 18:21 | 16.26 |
| MC4957-1 | BG32040.D | 11/04/11 | 19:07 | 16.26 |
| ZZZZZZ | BG32041.D | 11/04/11 | 19:53 | 16.27 |
| GBG1158-ECC115 | BG32042.D | 11/04/11 | 20:39 | 16.27 |

Surrogate Compounds

S1 = o-Terphenyl

(a) Retention time from GC signal #1

7.5.1

7

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## General Chemistry

# QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC4957
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC4957-1 Analyzed: 28-OCT-11 by HS Method: SM21 2540 B MOD.
ClientID: P-130(40-42) 102411

| | | |
|---|---|---|
| Wet Weight (Total) | 30.513 | g |
| Tare Weight | 19.334 | g |
| Dry Weight (Total) | 28.595 | g |
| Solids, Percent | 82.8 | % |

8.1

8

# SVE Install 2011 Data Review

**Laboratory SDG: MC5218**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 1/30/2012**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| VMP-44 (20-21) 110111 | VMP-44 (30-31) 110111 |
| VMP-45 (10-11) 110111 | VMP-45 (20-21) 110111 |
| VMP-45 (30-31) 110111 | VMP-45 (30-31) 110111-Dup |
| VMP-44 (30-31) 110111-EB | TB-110111 |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS/LCSD recoveries and VOC LCS/LCSD RPDs were outside evaluation criteria. VOC MS/MSD recoveries and MS/MSD RPDs were outside of evaluation criteria. Although not mentioned in the laboratory case narrative, acetone was detected in the method blank. Professional judgment was used to evaluate and qualify acetone in sample VMP-45 (30-31) 110111-Dup. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 1.4°C which is outside temperature criteria 4°C ± 2°C. Samples were received in good condition; no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

Yes

| Blank ID | Parameter | Analyte | Concentration |
|---|---|---|---|
| MSV140-MB | VOCs | Acetone | 9.2 ug/L |

Analytical data that required qualification based on blank contamination are in included in the table below. Analytical data that were reported non-detect or at concentrations greater than five times (5X) the associated blank concentration (10X for common

laboratory contaminants) did not require qualification.

| Sample ID | Parameter | Analyte | New RL | Qualification |
|---|---|---|---|---|
| VMP-44 (20-21) 110111 | VOCs | Acetone | 16.9 ug/kg | **U** |
| VMP-44 (30-31) 110111 | VOCs | Acetone | 29.9 ug/kg | **U** |
| VMP-45 (10-11) 110111 | VOCs | Acetone | 22.4 ug/kg | **U** |
| VMP-45 (20-21) 110111 | VOCs | Acetone | 15.9 ug/kg | **U** |

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSV140-BS | VOCs | Acrolein | **186** | NA | 70-130 |
| MSV140-BS | VOCs | Acrylonitrile | **600** | NA | 70-130 |
| MSK1878-BS/BSD | VOCs | Acetone | **174/174** | 0 | 70-130/25 |
| MSK1878-BS/BSD | VOCs | Acrolein | **196/197** | 0 | 70-130/25 |
| MSK1878-BS/BSD | VOCs | 2-Butanone (MEK) | **145/141** | 3 | 70-130/25 |
| MSL1960-BS/BSD | VOCs | Acrolein | **241/236** | 2 | 70-130/25 |
| MSL1960-BS/BSD | VOCs | 2-Chloroethyl vinyl ether | **151/**107 | **34** | 70-130/25 |
| MSL1960-BS/BSD | VOCs | Dichlorodifluoromethane | **67/65** | 3 | 70-130/25 |
| MSL1960-BS/BSD | VOCs | Vinyl acetate | **55/57** | 4 | 70-130/25 |

Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS/LCSD MSL1960-BS/BSD was associated with equipment blank VMP-44 (30-31) 110111-EB and trip blank TB-110111. Equipment blanks and trip blanks are quality control samples and are not qualified. LCS samples are not qualified based on RPD alone and LCS recoveries were within acceptance criteria, therefore, did not require qualification. No qualification of data was required.

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, sample VMP-45 (20-21) 110111 was spiked and analyzed for VOCs and TPH-GRO/DRO/ORO.

*Were MS/MSD recoveries within evaluation criteria?*

No

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/RPD Criteria |
|---|---|---|---|---|---|
| VMP-45 (20-21) 110111 | VOCs | Acetone | **42/37** | 9 | 70-130/30 |
| VMP-45 (20-21) 110111 | VOCs | Acrolein | **183/159** | 18 | 70-130/30 |
| VMP-45 (20-21) 110111 | VOCs | Acrylonitrile | **571/578** | 2 | 70-130/30 |
| VMP-45 (20-21) 110111 | VOCs | 2-Butanone (MEK) | **155/150** | 7 | 70-130/30 |
| VMP-45 (20-21) 110111 | VOCs | 2-Chloroethyl vinyl ether | **0/0** | NA | 10-160/30 |
| VMP-45 (20-21) 110111 | VOCs | 1,2-Dibromo-3-chloropropane | **132**/127 | 7 | 70-130/30 |
| VMP-45 (20-21) 110111 | VOCs | 4-Methyl-2-pentanone (MIBK) | **157/151** | 8 | 70-130/30 |
| VMP-45 (20-21) 110111 | VOCs | Naphthalene | **132**/124 | 10 | 70-130/30 |
| VMP-45 (20-21) 110111 | VOCs | Trichlorofluoromethane | **57**/98 | **50** | 70-130/30 |
| VMP-45 (20-21) 110111 | VOCs | Vinyl acetate | **65/54** | 22 | 70-130/30 |

USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone and LCS recoveries were within evaluation criteria with the exception of compounds discussed in Section 5.0 of this data review. No qualification of the data was required.

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

Yes

| Field ID | Field Duplicate ID |
|---|---|
| VMP-45 (30-31) 110111 | VMP-45 (30-31) 110111-DUP |

*Were field duplicates within evaluation criteria?*

Yes

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

Yes, professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations greater than two times (2X) the reporting limit (RL), since acetone is not representative of site conditions. Additionally, USEPA Method 5035A states that acidification of certain soils with sodium bisulfate may produce a false positive acetone artifact of 100-200 ppb, or more. Acetone reported at concentrations less than 200 ppb (ug/kg) were qualified.

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| VMP-45 (30-31) 110111-DUP | Acetone | 113 ug/kg | **U** | Professional Judgment |

New England ACCUTEST LABORATORIES

11/23/11





Technical Report for

Shell Oil

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford,

INC#97216640 / SAP#340061

Accutest Job Number: MC5218

Sampling Date: 11/01/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **113**

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Reza Tand
Lab Director

Reviewed on 1/30/2012

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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# Sample Summary

Shell Oil

Job No: MC5218

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|
| MC5218-1 | 11/01/11 | 13:30 RH | 11/04/11 | SO | Soil | VMP-44 (20-21)110111 |
| MC5218-2 | 11/01/11 | 14:00 RH | 11/04/11 | SO | Soil | VMP-44 (30-31)110111 |
| MC5218-3 | 11/01/11 | 09:25 RH | 11/04/11 | SO | Soil | VMP-45 (10-11)110111 |
| MC5218-4 | 11/01/11 | 09:45 RH | 11/04/11 | SO | Soil | VMP-45 (20-21)110111 |
| MC5218-4D | 11/01/11 | 09:45 RH | 11/04/11 | SO | Soil Dup/MSD | VMP-45 (20-21)110111 |
| MC5218-4S | 11/01/11 | 09:45 RH | 11/04/11 | SO | Soil Matrix Spike | VMP-45 (20-21)110111 |
| MC5218-5 | 11/01/11 | 10:05 RH | 11/04/11 | SO | Soil | VMP-45 (30-31)110111 |
| MC5218-6 | 11/01/11 | 10:05 RH | 11/04/11 | SO | Soil | VMP-45 (30-31)110111-DUP |
| MC5218-7 | 11/01/11 | 15:30 RH | 11/04/11 | AQ | Equipment Blank | VMP-44 (30-31)110111-EB |
| MC5218-8 | 11/01/11 | 00:00 RH | 11/04/11 | AQ | Trip Blank Water | TB-110111 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC5218 |
| **Site:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Ra | **Report Date** | 11/20/2011 10:58:36 AM |

7 Sample(s), 1 Trip Blank(s) were collected on 11/01/2011 and were received at Accutest on 11/04/2011 properly preserved, at 1.4 Deg. C and intact. These Samples received an Accutest job number of MC5218. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSL1960

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC5219-1MS, MC5219-1MSD were used as the QC samples indicated.
- Blank Spike Recovery(s) for 2-Chloroethyl vinyl ether, Dichlorodifluoromethane, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,4-Dioxane, Acetone, Bromomethane, Chloromethane, Dichlorodifluoromethane are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for Acetone, Chloromethane, Dichlorodifluoromethane, Isopropylbenzene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for Bromomethane are outside control limits for sample MC5219-1MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- RPD of MSL1960-BSD for 2-Chloroethyl vinyl ether: Outside control limits. Blank Spike meets program technical requirements.
- MSL1960-BS/BSD/MS/MSD for Acrolein: Outside control limits. Associated samples are non-detect for this compound.
- Blank Spike Duplicate Recovery(s) for Dichlorodifluoromethane, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.

**Matrix** SO **Batch ID:** MSK1878

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5314-1MS, MC5314-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- BS/BSD Recovery(s) for 2-Butanone (MEK), Acetone, Acrolein are outside control limits. Associated samples are non-detect for this compound.
- Matrix Spike Recovery(s) for 1,1-Dichloroethene, 2,2-Dichloropropane, Isopropylbenzene, Methylene chloride, Trichloroethene, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interferenee. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2-Hexanone, Isopropylbenzene, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2-Butanone (MEK), Acetone, Acrolein outside control limits. Associated samples are non-detect for this compound.
- Matrix Spike Recovery(s) for 2-Butanone (MEK), Acetone, Acrolein, Acrylonitrile, Chloroethane are outside control limits. Associated samples are non-detect for this compound.

**Matrix** SO **Batch ID:** MSV140

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5218-4MS, MC5218-4MSD were used as the QC samples indicated.
- Sample(s) MC5218-1, MC5218-2, MC5218-3, MC5218-4, MC5218-6 have compound(s) reported with a "B" qualifier, indicating analyte is found in the associated method blank.

## Volatiles by GCMS By Method SW846 8260B

| Matrix SO | Batch ID: MSV140 |
|---|---|

- BS/MS/MSD Recovery(s) for Acrolein, Acrylonitrile are outside control limits. Associated samples are non-detect for this compound.
- Matrix Spike Recovery(s) for 1,2-Dibromo-3-chloropropane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 4-Methyl-2-pentanone (MIBK), Acetone, Naphthalene, Trichlorofluoromethane, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2-Butanone (MEK), 2-Chloroethyl vinyl ether, 4-Methyl-2-pentanone (MIBK), Acetone, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for Trichlorofluoromethane are outside control limits for sample MC5218-4MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.

## Volatiles by GC By Method SW846 8015

| Matrix AQ | Batch ID: GBH1380 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5171-1MS, MC5171-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MC5171-1MS for 2,5-Dibromotoluene: Outside control limits due to possible matrix interference.

| Matrix SO | Batch ID: GBH1374 |
|---|---|

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5218-4MS, MC5218-4MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Extractables by GC By Method SW846-8015

| Matrix AQ | Batch ID: OP26911 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5278-2MS, MC5278-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

| Matrix SO | Batch ID: OP26896 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC5218-4MS, MC5218-4MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN36795 |
|---|---|

- Sample(s) MC5218-4DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC5218).

New England ACCUTEST LABORATORIES

## Sample Results

Report of Analysis

# Report of Analysis



3.1

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-44 (20-21)110111 | | |
| Lab Sample ID: | MC5218-1 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | 92.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V3162.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 3.92 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~16.9~~ u | ~~6.9~~ 16.9 | 6.9 | ug/kg | B |
| 107-02-8 | Acrolein | ND | 34 | 23 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6.9 | 2.8 | ug/kg | |
| 71-43-2 | Benzene | 1.6 | 0.69 | 0.17 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 6.9 | 0.26 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6.9 | 1.4 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.8 | 0.29 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.8 | 0.65 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.8 | 0.93 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 6.9 | 1.6 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 6.9 | 1.7 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 6.9 | 0.23 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 6.9 | 0.90 | ug/kg | |
| 75-15-0 | Carbon disulfide | 6.9 | 6.9 | 1.3 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.8 | 0.31 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.8 | 0.13 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6.9 | 0.36 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6.9 | 6.9 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.8 | 0.20 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6.9 | 0.30 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 6.9 | 0.19 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6.9 | 1.5 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6.9 | 6.9 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.8 | 0.90 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.8 | 0.26 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.8 | 0.21 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.8 | 0.20 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.8 | 0.19 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.8 | 0.47 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.8 | 0.21 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.8 | 0.20 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.8 | 0.44 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-44 (20-21)110111 | | |
| Lab Sample ID: | MC5218-1 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | 92.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.8 | 0.37 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.8 | 0.35 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.8 | 0.31 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6.9 | 1.6 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6.9 | 0.25 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6.9 | 0.27 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.8 | 1.4 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.8 | 0.94 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 34 | 34 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6.9 | 4.3 | ug/kg | |
| 100-41-4 | Ethylbenzene | 4.1 | 2.8 | 0.18 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 6.9 | 6.9 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6.9 | 1.4 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 6.9 | 0.22 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 6.9 | 0.22 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.8 | 0.85 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6.9 | 1.2 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6.9 | 0.42 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.8 | 0.50 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 6.9 | 6.9 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 6.9 | 0.22 | ug/kg | |
| 100-42-5 | Styrene | ND | 6.9 | 0.69 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6.9 | 1.4 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.8 | 0.24 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.8 | 0.23 | ug/kg | |
| 108-88-3 | Toluene | 3.7 | 6.9 | 0.25 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6.9 | 1.5 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6.9 | 6.9 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.8 | 0.25 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.8 | 0.35 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.8 | 0.27 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.8 | 1.3 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6.9 | 0.29 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2.4 | 6.9 | 0.22 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 6.9 | 0.25 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 6.9 | 1.6 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.8 | 0.89 | ug/kg | |
| | m,p-Xylene | 2.9 | 2.8 | 0.35 | ug/kg | |
| 95-47-6 | o-Xylene | 0.81 | 2.8 | 0.25 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 3.8 | 2.8 | 0.17 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-44 (20-21)110111 | | |
| Lab Sample ID: | MC5218-1 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | 92.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 102% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 89% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-44 (20-21)110111 | | |
| Lab Sample ID: | MC5218-1 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8015 | Percent Solids: | 92.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24983.D | 1 | 11/07/11 | WS | n/a | n/a | GBH1374 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.09 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 18 | 3.4 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 88% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-44 (20-21)110111 | | |
| Lab Sample ID: | MC5218-1 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 92.6 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG32136.D | 1 | 11/12/11 | KD | 11/10/11 | OP26896 | GBG1165 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.6 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 64% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.2

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-44 (30-31)110111 | | |
| Lab Sample ID: | MC5218-2 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | 79.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V3163.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.47 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~29.9~~ U | ~~7.0~~ 29.7 | 7.0 | ug/kg | B |
| 107-02-8 | Acrolein | ND | 35 | 24 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 7.0 | 2.8 | ug/kg | |
| 71-43-2 | Benzene | 37.5 | 0.70 | 0.18 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 7.0 | 0.27 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 7.0 | 1.5 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.8 | 0.30 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.8 | 0.66 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.8 | 0.95 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 7.0 | 1.7 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 7.0 | 1.8 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 7.0 | 0.23 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 7.0 | 0.92 | ug/kg | |
| 75-15-0 | Carbon disulfide | 5.8 | 7.0 | 1.4 | ug/kg | J |
| 56-23-5 | Carbon tetrachloride | ND | 2.8 | 0.32 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.8 | 0.13 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 7.0 | 0.37 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 7.0 | 7.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.8 | 0.21 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 7.0 | 0.30 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 7.0 | 0.20 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 7.0 | 1.6 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 7.0 | 7.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.8 | 0.92 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.8 | 0.27 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.8 | 0.21 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.8 | 0.20 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.8 | 0.20 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.8 | 0.48 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.8 | 0.21 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.8 | 0.20 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.8 | 0.45 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-44 (30-31)II0111 | | |
| Lab Sample ID: | MC5218-2 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | 79.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.8 | 0.38 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.8 | 0.36 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.8 | 0.32 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 7.0 | 1.6 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 7.0 | 0.26 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 7.0 | 0.27 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.8 | 1.4 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.8 | 0.96 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 35 | 35 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 7.0 | 4.4 | ug/kg | |
| 100-41-4 | Ethylbenzene | 4.2 | 2.8 | 0.18 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 7.0 | 7.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 7.0 | 1.5 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 7.0 | 0.22 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 7.0 | 0.23 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.8 | 0.87 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 7.0 | 1.2 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 7.0 | 0.43 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.8 | 0.51 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 7.0 | 7.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 0.78 | 7.0 | 0.23 | ug/kg | J |
| 100-42-5 | Styrene | ND | 7.0 | 0.70 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 7.0 | 1.4 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.8 | 0.25 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.8 | 0.24 | ug/kg | |
| 108-88-3 | Toluene | 4.2 | 7.0 | 0.25 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 7.0 | 1.6 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 7.0 | 7.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.8 | 0.26 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.8 | 0.36 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.8 | 0.28 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.8 | 1.3 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 7.0 | 0.30 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.1 | 7.0 | 0.22 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 7.0 | 0.26 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 7.0 | 1.7 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.8 | 0.91 | ug/kg | |
| | m,p-Xylene | 2.8 | 2.8 | 0.35 | ug/kg | |
| 95-47-6 | o-Xylene | 0.61 | 2.8 | 0.26 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 3.5 | 2.8 | 0.18 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-44 (30-31)110111 | | |
| Lab Sample ID: | MC5218-2 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | 79.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 103% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 89% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-44 (30-31)110111 | | |
| Lab Sample ID: | MC5218-2 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8015 | Percent Solids: | 79.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24984.D | 1 | 11/07/11 | WS | n/a | n/a | GBH1374 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 2.93 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 23 | 4.3 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 87% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-44 (30-31)110111 | | |
| Lab Sample ID: | MC5218-2 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 79.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG32138.D | 1 | 11/12/11 | KD | 11/10/11 | OP26896 | GBG1165 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.2 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 21 | 16 | mg/kg | |
| | TPH (> C28-C40) | ND | 21 | 16 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 68% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (10-11)110111 | | |
| Lab Sample ID: | MC5218-3 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | 96.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V3164.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.06 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~22.4~~ 22.4 | ~~6.4~~ | 6.4 | ug/kg | B |
| 107-02-8 | Acrolein | ND | 32 | 21 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6.4 | 2.5 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.64 | 0.16 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 6.4 | 0.24 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6.4 | 1.3 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.5 | 0.27 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.5 | 0.60 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.5 | 0.86 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 6.4 | 1.5 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 6.4 | 1.6 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 6.4 | 0.21 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 6.4 | 0.83 | ug/kg | |
| 75-15-0 | Carbon disulfide | 5.6 | 6.4 | 1.2 | ug/kg | J |
| 56-23-5 | Carbon tetrachloride | ND | 2.5 | 0.29 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.5 | 0.12 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6.4 | 0.33 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6.4 | 6.4 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.5 | 0.19 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6.4 | 0.27 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 6.4 | 0.18 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6.4 | 1.4 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6.4 | 6.4 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.5 | 0.83 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.5 | 0.24 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.5 | 0.19 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.5 | 0.18 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.5 | 0.18 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.5 | 0.43 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.5 | 0.19 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.5 | 0.18 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.5 | 0.40 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (10-11)110111 | | |
| Lab Sample ID: | MC5218-3 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | 96.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dicbloroethene | ND | 2.5 | 0.34 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.5 | 0.32 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.5 | 0.29 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6.4 | 1.5 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6.4 | 0.23 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6.4 | 0.24 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.5 | 1.3 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.5 | 0.87 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 32 | 32 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6.4 | 4.0 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.5 | 0.16 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 6.4 | 6.4 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6.4 | 1.3 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 6.4 | 0.20 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 6.4 | 0.21 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.5 | 0.79 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6.4 | 1.1 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6.4 | 0.39 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.5 | 0.46 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 6.4 | 6.4 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 6.4 | 0.21 | ug/kg | |
| 100-42-5 | Styrene | ND | 6.4 | 0.64 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6.4 | 1.3 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.5 | 0.22 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.5 | 0.21 | ug/kg | |
| 108-88-3 | Toluene | 0.67 | 6.4 | 0.23 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6.4 | 1.4 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6.4 | 6.4 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.5 | 0.23 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.5 | 0.32 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.5 | 0.25 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.5 | 1.2 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6.4 | 0.27 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 6.4 | 0.20 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 6.4 | 0.23 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 6.4 | 1.5 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.5 | 0.82 | ug/kg | |
| | m,p-Xylene | ND | 2.5 | 0.32 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.5 | 0.23 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.5 | 0.16 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.3

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (10-11)110111 | | |
| Lab Sample ID: | MC5218-3 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | 96.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 103% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 102% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 89% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calihration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (10-11)110111 | | |
| Lab Sample ID: | MC5218-3 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8015 | Percent Solids: | 96.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24985.D | 1 | 11/07/11 | WS | n/a | n/a | GBH1374 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.37 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 15 | 2.9 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 85% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (10-11)110111 | | |
| Lab Sample ID: | MC5218-3 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 96.9 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG32142.D | 1 | 11/12/11 | KD | 11/10/11 | OP26896 | GBG1165 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.7 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 14.0 | 16 | 12 | mg/kg | J |
| | TPH (>C28-C40) | 13.6 | 16 | 12 | mg/kg | J |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 70% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (20-21)110111 | | |
| Lab Sample ID: | MC5218-4 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | 95.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V3159.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 3.47 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~15.9~~ U | ~~7.6~~ 15.9 | 7.6 | ug/kg | B |
| 107-02-8 | Acrolein | ND | 38 | 26 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 7.6 | 3.0 | ug/kg | |
| 71-43-2 | Benzene | 1.2 | 0.76 | 0.19 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 7.6 | 0.29 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 7.6 | 1.6 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 3.0 | 0.32 | ug/kg | |
| 75-25-2 | Bromoform | ND | 3.0 | 0.71 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 3.0 | 1.0 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 7.6 | 1.8 | ug/kg | |
| 104-51-8 | u-Butylbenzene | ND | 7.6 | 1.9 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 7.6 | 0.25 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 7.6 | 0.99 | ug/kg | |
| 75-15-0 | Carbon disulfide | 6.3 | 7.6 | 1.5 | ug/kg | J |
| 56-23-5 | Carbon tetrachloride | ND | 3.0 | 0.34 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 3.0 | 0.14 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 7.6 | 0.39 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 7.6 | 7.6 | ug/kg | |
| 67-66-3 | Chloroform | ND | 3.0 | 0.22 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 7.6 | 0.33 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 7.6 | 0.21 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 7.6 | 1.7 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 7.6 | 7.6 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 3.0 | 0.98 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 3.0 | 0.29 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 3.0 | 0.23 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 3.0 | 0.22 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 3.0 | 0.21 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 3.0 | 0.52 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 3.0 | 0.23 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 3.0 | 0.22 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 3.0 | 0.48 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (20-21)110111 | | |
| Lab Sample ID: | MC5218-4 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | 95.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 3.0 | 0.41 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 3.0 | 0.38 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 3.0 | 0.34 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 7.6 | 1.7 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 7.6 | 0.28 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 7.6 | 0.29 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 3.0 | 1.5 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 3.0 | 1.0 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 38 | 38 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 7.6 | 4.7 | ug/kg | |
| 100-41-4 | Ethylbenzene | 2.8 | 3.0 | 0.20 | ug/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 7.6 | 7.6 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 7.6 | 1.6 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 7.6 | 0.24 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 7.6 | 0.24 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 3.0 | 0.93 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 7.6 | 1.3 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 7.6 | 0.46 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 3.0 | 0.54 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 7.6 | 7.6 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 7.6 | 0.24 | ug/kg | |
| 100-42-5 | Styrene | ND | 7.6 | 0.76 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 7.6 | 1.5 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 3.0 | 0.27 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 3.0 | 0.25 | ug/kg | |
| 108-88-3 | Toluene | 3.0 | 7.6 | 0.27 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 7.6 | 1.7 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 7.6 | 7.6 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 3.0 | 0.28 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 3.0 | 0.38 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 3.0 | 0.30 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 3.0 | 1.4 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 7.6 | 0.32 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 7.6 | 0.24 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 7.6 | 0.27 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 7.6 | 1.8 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 3.0 | 0.97 | ug/kg | |
| | m,p-Xylene | 0.96 | 3.0 | 0.38 | ug/kg | J |
| 95-47-6 | o-Xylene | ND | 3.0 | 0.28 | ug/kg | |
| 1330-20-7 | Xylene (total) | 0.96 | 3.0 | 0.19 | ug/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.4

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (20-21)110111 | | |
| Lab Sample ID: | MC5218-4 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | 95.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 102% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 102% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 89% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (20-21)110111 | | |
| Lab Sample ID: | MC5218-4 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8015 | Percent Solids: | 95.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24986.D | 1 | 11/07/11 | WS | n/a | n/a | GBH1374 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.16 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 17 | 3.2 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 84% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (20-21)110111 | | |
| Lab Sample ID: | MC5218-4 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 95.4 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG32137.D | 1 | 11/12/11 | KD | 11/10/11 | OP26896 | GBG1165 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.5 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | 13 | mg/kg | |
| | TPH (>C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 74% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (30-31)110111 | | |
| Lab Sample ID: | MC5218-5 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | 92.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | K56070.D | 1 | 11/10/11 | GK | n/a | n/a | MSK1878 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.19 g | 10.0 ml | 100 ul |
| Run #2 | | | |

**VOA Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 860 | 860 | ug/kg | |
| 107-02-8 | Acrolein | ND | 4300 | 2900 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 860 | 350 | ug/kg | |
| 71-43-2 | Benzene | ND | 86 | 22 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 860 | 33 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 860 | 180 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 350 | 36 | ug/kg | |
| 75-25-2 | Bromoform | ND | 350 | 82 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 350 | 120 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 860 | 210 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 272 | 860 | 220 | ug/kg | J |
| 135-98-8 | sec-Butylbenzene | 114 | 860 | 29 | ug/kg | J |
| 98-06-6 | tert-Bntylbenzene | ND | 860 | 110 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 860 | 170 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 350 | 39 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 350 | 16 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 860 | 45 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 860 | 860 | ug/kg | |
| 67-66-3 | Chloroform | ND | 350 | 26 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 860 | 37 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 860 | 24 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 860 | 190 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 860 | 860 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 350 | 110 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 350 | 33 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 350 | 26 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 350 | 25 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 350 | 24 | ug/kg | |
| 75-71-8 | Dichlorodiflnoromethane | ND | 350 | 59 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 350 | 26 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 350 | 25 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 350 | 55 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a componnd

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (30-31)110111 | | |
| Lab Sample ID: | MC5218-5 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | 92.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 350 | 47 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 350 | 44 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 350 | 39 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 860 | 200 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 860 | 32 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 860 | 33 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 350 | 170 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 350 | 120 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 4300 | 4300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 860 | 540 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 350 | 22 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 860 | 860 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 860 | 180 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 106 | 860 | 27 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 56.6 | 860 | 28 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 350 | 110 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 860 | 150 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 860 | 53 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 350 | 62 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 860 | 860 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 168 | 860 | 28 | ug/kg | J |
| 100-42-5 | Styrene | ND | 860 | 86 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 860 | 170 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 350 | 30 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 350 | 29 | ug/kg | |
| 108-88-3 | Toluene | ND | 860 | 31 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 860 | 190 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 860 | 860 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 350 | 32 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 350 | 44 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 350 | 34 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 350 | 160 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 860 | 36 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 440 | 860 | 27 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 176 | 860 | 31 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 860 | 200 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 350 | 110 | ug/kg | |
| | m,p-Xylene | ND | 350 | 43 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 350 | 32 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 350 | 22 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compouud

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (30-31)110111 | | |
| Lab Sample ID: | MC5218-5 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | 92.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 120% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 113% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 123% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (30-31)110111 | | |
| Lab Sample ID: | MC5218-5 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8015 | Percent Solids: | 92.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24990.D | 1 | 11/07/11 | WS | n/a | n/a | GBH1374 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 3.50 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 86.6 | 16 | 3.0 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 110% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (30-31)110111 | | |
| Lab Sample ID: | MC5218-5 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 92.8 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG32139.D | 1 | 11/12/11 | KD | 11/10/11 | OP26896 | GBG1165 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.7 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 975 | 17 | 13 | mg/kg | |
| | TPH ( > C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 88% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.6

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (30-31)110111-DUP | | |
| Lab Sample ID: | MC5218-6 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | 92.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | V3165.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 3.50 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~113~~ U | ~~7.7~~ 113 | 7.7 | ug/kg | B |
| 107-02-8 | Acrolein | ND | 39 | 26 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 7.7 | 3.1 | ug/kg | |
| 71-43-2 | Benzene | 2.0 | 0.77 | 0.19 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 7.7 | 0.29 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 7.7 | 1.6 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 3.1 | 0.32 | ug/kg | |
| 75-25-2 | Bromoform | ND | 3.1 | 0.73 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 3.1 | 1.0 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 7.7 | 1.8 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 16.6 | 7.7 | 1.9 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | 11.6 | 7.7 | 0.26 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | 2.4 | 7.7 | 1.0 | ug/kg | J |
| 75-15-0 | Carbon disulfide | 6.5 | 7.7 | 1.5 | ug/kg | J |
| 56-23-5 | Carbon tetrachloride | ND | 3.1 | 0.35 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 3.1 | 0.14 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 7.7 | 0.40 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 7.7 | 7.7 | ug/kg | |
| 67-66-3 | Chloroform | ND | 3.1 | 0.23 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 7.7 | 0.33 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 7.7 | 0.22 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 7.7 | 1.7 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 7.7 | 7.7 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 3.1 | 1.0 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 3.1 | 0.30 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 3.1 | 0.23 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 3.1 | 0.22 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 3.1 | 0.22 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 3.1 | 0.53 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 3.1 | 0.23 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 3.1 | 0.22 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 3.1 | 0.49 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (30-31)110111-DUP | | |
| Lab Sample ID: | MC5218-6 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | 92.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 3.1 | 0.42 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 3.1 | 0.39 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 3.1 | 0.35 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 7.7 | 1.8 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 7.7 | 0.28 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 7.7 | 0.30 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 3.1 | 1.5 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 3.1 | 1.1 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 39 | 39 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 7.7 | 4.8 | ug/kg | |
| 100-41-4 | Ethylbenzene | 3.1 | 3.1 | 0.20 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 7.7 | 7.7 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 7.7 | 1.6 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 3.8 | 7.7 | 0.25 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | 3.1 | 7.7 | 0.25 | ug/kg | J |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 3.1 | 0.96 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 7.7 | 1.3 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 7.7 | 0.47 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 3.1 | 0.56 | ug/kg | |
| 91-20-3 | Naphthalene | 43.1 | 7.7 | 7.7 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 4.1 | 7.7 | 0.25 | ug/kg | J |
| 100-42-5 | Styrene | ND | 7.7 | 0.77 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 7.7 | 1.6 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 3.1 | 0.27 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 3.1 | 0.26 | ug/kg | |
| 108-88-3 | Toluene | 3.8 | 7.7 | 0.28 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 7.7 | 1.7 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 7.7 | 7.7 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 3.1 | 0.28 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 3.1 | 0.39 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 3.1 | 0.30 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 3.1 | 1.4 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 7.7 | 0.32 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 3.1 | 7.7 | 0.24 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.3 | 7.7 | 0.28 | ug/kg | J |
| 108-05-4 | Vinyl Acetate | ND | 7.7 | 1.8 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 3.1 | 0.99 | ug/kg | |
| | m,p-Xylene | 3.0 | 3.1 | 0.39 | ug/kg | J |
| 95-47-6 | o-Xylene | 2.0 | 3.1 | 0.29 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 4.9 | 3.1 | 0.19 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (30-31)110111-DUP | | |
| Lab Sample ID: | MC5218-6 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | 92.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 101% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 101% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 107% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (30-31)110111-DUP | | |
| Lab Sample ID: | MC5218-6 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846 8015 | Percent Solids: | 92.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH24991.D | 1 | 11/07/11 | WS | n/a | n/a | GBH1374 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume | Methanol Aliquot |
|---|---|---|---|
| Run #1 | 2.92 g | 10.0 ml | 100 ul |
| Run #2 | | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 33.8 | 19 | 3.6 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 114% | | 36-148% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-45 (30-31)110111-DUP | | |
| Lab Sample ID: | MC5218-6 | Date Sampled: | 11/01/11 |
| Matrix: | SO - Soil | Date Received: | 11/04/11 |
| Method: | SW846-8015 SW846 3546 | Percent Solids: | 92.5 |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG32140.D | 1 | 11/12/11 | KD | 11/10/11 | OP26896 | GBG1165 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 15.9 g | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | 861 | 17 | 13 | mg/kg | |
| | TPH ( > C28-C40) | 21.9 | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 88% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-44 (30-31)110111-EB | | |
| Lab Sample ID: | MC5218-7 | Date Sampled: | 11/01/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | L58211.D | 1 | 11/11/11 | EK | n/a | n/a | MSL1960 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-44 (30-31)110111-EB | | |
| Lab Sample ID: | MC5218-7 | Date Sampled: | 11/01/I1 |
| Matrix: | AQ - Equipment Blank | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 5.0 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-44 (30-31)110111-EB | | |
| Lab Sample ID: | MC5218-7 | Date Sampled: | 11/01/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 | 170 East Rand Ave. Hartford, IL | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 91% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 82% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-44 (30-31)110111-EB | | |
| Lab Sample ID: | MC5218-7 | Date Sampled: | 11/01/11 |
| Matrix: | AQ - Equipment Blank | Date Received: | 11/04/11 |
| Method: | SW846 8015 | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BH25107.D | 1 | 11/13/11 | WS | n/a | n/a | GBH1380 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 0.10 | 0.070 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 96% | | 60-126% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| **Client Sample ID:** | VMP-44 (30-31)110111-EB | | |
| **Lab Sample ID:** | MC5218-7 | **Date Sampled:** | 11/01/11 |
| **Matrix:** | AQ - Equipment Blank | **Date Received:** | 11/04/11 |
| **Method:** | SW846-8015 SW846 3510C | **Percent Solids:** | n/a |
| **Project:** | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | BG32113.D | 1 | 11/11/11 | KD | 11/08/11 | OP26911 | GBG1162 |
| Run #2 | | | | | | | |

| | Initial Volume | Final Volume |
|---|---|---|
| Run #1 | 1000 ml | 1.0 ml |
| Run #2 | | |

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 0.20 | 0.024 | mg/l | |
| | TPH (> C28-C40) | ND | 0.20 | 0.024 | mg/l | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 43% | | 40-140% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB-110111 | | |
| Lab Sample ID: | MC5218-8 | Date Sampled: | 11/01/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | L58212.D | 1 | 11/11/11 | EK | n/a | n/a | MSL1960 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB-110111 | | |
| Lab Sample ID: | MC5218-8 | Date Sampled: | 11/01/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 5.0 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB-110111 | | |
| Lab Sample ID: | MC5218-8 | Date Sampled: | 11/01/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 11/04/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 90% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 89% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 84% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

New England ACCUTEST LABORATORIES



## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

LAB (LOCATION)

- ☐ XENCO ( )
- ☐ CALSCIENCE ( )
- ☑ OTHER ( Accutest Labs, 495 Technology Ctr W )
- ☐ Lab Vendor # ( )
- ☐ SPL ( )

Lab Vendor #

# Shell Oil Products Chain Of Custody Record

URS

Please Check Appropriate Box:

- ☑ ENV. SERVICES
- ☐ MOTIVA RETAIL
- ☐ SHELL RET
- ☐ MOTIVA SOBCH
- ☐ CONSULTANT
- ☐ LUBES
- ☐ SHELL PIPELINE
- ☐ OTHER

Print Bill To Contact Name: Jeff Adams

PO #

INCIDENT # (ENV SERVICES): 9 7 2 1 6 6 4 0

SAP #: 3 4 0 0 6 1

☐ CHECK IF NO INCIDENT # APPLIES

DATE: 11/3/11

PAGE: 1 of 1

SAMPLING COMPANY: URS CORPORATION

LOG CODE:

SITE ADDRESS: Street and City: 170 EAST RAND AVENUE – HARTFORD

State: IL

GLOBAL ID NO:

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300; ST. LOUIS, MO 63110

REF DELIVERABLE TO (Name, Company, Office Location):

PHONE NO:

E-MAIL:

CONSULTANT PROJECT NO.: Roxana SVE Install 2011 / 21582593.00014

PROJECT CONTACT (Hardcopy or PDF Report to): Elizabeth Kunkel

TELEPHONE: 314-743-4179

FAX: 314-429-0452

ELIZABETH.KUNKEL@URSCORP.COM

SAMPLER NAME(S) (Print): RICHARD HART

LAB USE ONLY: MC5218

TURNAROUND TIME (CALENDAR DAYS): ☑ STANDARD (14 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND

REQUESTED ANALYSIS

☐ LA - RWQCB REPORT FORMAT ☑ UST AGENCY:

DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C°: Cooler #1 | Cooler #2 | Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
* Please include "J" values on Reports.
* Please provide sample receipt upon login.

- ☑ SHELL CONTRACT RATE APPLIES
- ☐ STATE REIMBURSEMENT RATE APPLIES
- ☐ EDD NOT NEEDED
- ☑ RECEIPT VERIFICATION REQUESTED
- ☐ PROVIDE LEDO DISK

FIELD NOTES:

TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE PCL | PRESERVATIVE HNO3 | PRESERVATIVE H2SO4 | PRESERVATIVE CH3OH | PRESERVATIVE MeHSO4 | PRESERVATIVE NONE | PRESERVATIVE OTHER | # of Cont | VOC 8260 SL | TPH 8015 - GRO/DRO/ORO | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | VMP-44(20-21)110111 | 11/1 | 1330 | soil | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -2 | VMP-44(30-31)110111 | 11/1 | 1400 | | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -3 | VMP-45(10-11)110111 | 11/1 | 0925 | | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -4 | VMP-45(20-21)110111 | 11/1 | 0945 | | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -4,SB | VMP-45(20-21)110111-MS/MSD | 11/1 | 0945 | | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -5 | VMP-45(30-31)110111 | 11/1 | 1005 | | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -6 | VMP-45(30-31)110111-DUP | 11/1 | 1005 | | | | | 2 | 2 | 2 | | 6 | X | X | | |
| -7 | VMP-44(30-31)110111-EB | 11/1 | 1530 | water | 3 | | | | | 2 | | 5 | X | X | | |
| | Trip Blanks | | | water | 2 | | | | | | | 2 | X | | | 13C, 1B2, 16AA |
| -8 | TB-110111 | 11/1 | | water | 2 | | | | | | | 2 | X | | | 10I4 |

| Relinquished by (Signature) | Received by (Signature) | Date | Time |
|---|---|---|---|
| [signature] | FedEx | 11/3/11 | 1600 |
| FedEx | [signature] | 11/4/11 | 9:15 |
| | | | 1.4 |

05/2/08 Revision

MC5218: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC5218 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 11/4/2011 Delivery Method: Client Service Action Required at Login: No

Project: 170 EAST RAND AVEHARTFORD IL No. Coolers: 1 Airbill #'s:

| Cooler Security | Y | or | N | | Y | or | N |
|---|---|---|---|---|---|---|---|
| 1. Custody Seals Present: | ☑ | | ☐ | 3. COC Present: | ☑ | | ☐ |
| 2. Custody Seals Intact: | ☑ | | ☐ | 4. Smpl Dates/Time OK | ☑ | | ☐ |

| Cooler Temperature | Y | or | N |
|---|---|---|---|
| 1. Temp criteria achieved: | ☑ | | ☐ |
| 2. Cooler temp verification: | Infared gun | | |
| 3. Cooler media: | Ice (bag) | | |

| Quality Control Preservatio | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Trip Blank present / cooler: | ☑ | | ☐ | ☐ |
| 2. Trip Blank listed on COC: | ☑ | | ☐ | ☐ |
| 3. Samples preserved properly: | ☑ | | ☐ | |
| 4. VOCs headspace free: | ☑ | | ☐ | ☐ |

| Sample Integrity - Documentation | Y | or | N |
|---|---|---|---|
| 1. Sample labels present on bottles: | ☑ | | ☐ |
| 2. Container labeling complete: | ☑ | | ☐ |
| 3. Sample container label / COC agree: | ☑ | | ☐ |

| Sample Integrity - Condition | Y | or | N |
|---|---|---|---|
| 1. Sample recvd within HT: | ☑ | | ☐ |
| 2. All containers accounted for: | ☑ | | ☐ |
| 3. Condition of sample: | Intact | | |

| Sample Integrity - Instructions | Y | or | N | N/A |
|---|---|---|---|---|
| 1. Analysis requested is clear: | ☑ | | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | | ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ | | ☐ | |
| 4. Compositing instructions clear: | ☐ | | ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ | | ☐ | ☑ |

Comments

Accutest Laboratories
V.508.481.6200

495 Technology Center West, Bldg One
F 508.481.7753

Marlborough, MA
www.accutest.com

4.1 4

**MC5218: Chain of Custody**
**Page 2 of 2**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC5218

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC5218-1 | Collected: 01-NOV-11 13:30 By: RH | | Received: 04-NOV-11 By: JB | | | |
| VMP-44 (20-21)110111 | | | | | | |
| MC5218-1 | SM21 2540 B MOD. | 07-NOV-11 | HS | | | %SOL |
| MC5218-1 | SW846 8015 | 07-NOV-11 13:18 | WS | | | V8015GRO |
| MC5218-1 | SW846 8260B | 08-NOV-11 15:30 | AMY | | | V8260SL |
| MC5218-1 | SW846-8015 | 12-NOV-11 00:02 | KD | 10-NOV-11 | MEW | B8015DROORO |
| MC5218-2 | Collected: 01-NOV-11 14:00 By: RH | | Received: 04-NOV-11 By: JB | | | |
| VMP-44 (30-31)110111 | | | | | | |
| MC5218-2 | SM21 2540 B MOD. | 07-NOV-11 | HS | | | %SOL |
| MC5218-2 | SW846 8015 | 07-NOV-11 13:58 | WS | | | V8015GRO |
| MC5218-2 | SW846 8260B | 08-NOV-11 16:01 | AMY | | | V8260SL |
| MC5218-2 | SW846-8015 | 12-NOV-11 01:35 | KD | 10-NOV-11 | MEW | B8015DROORO |
| MC5218-3 | Collected: 01-NOV-11 09:25 By: RH | | Received: 04-NOV-11 By: JB | | | |
| VMP-45 (10-11)110111 | | | | | | |
| MC5218-3 | SM21 2540 B MOD. | 07-NOV-11 | HS | | | %SOL |
| MC5218-3 | SW846 8015 | 07-NOV-11 14:39 | WS | | | V8015GRO |
| MC5218-3 | SW846 8260B | 08-NOV-11 16:32 | AMY | | | V8260SL |
| MC5218-3 | SW846-8015 | 12-NOV-11 04:39 | KD | 10-NOV-11 | MEW | B8015DROORO |
| MC5218-4 | Collected: 01-NOV-11 09:45 By: RH | | Received: 04-NOV-11 By: JB | | | |
| VMP-45 (20-21)110111 | | | | | | |
| MC5218-4 | SM21 2540 B MOD. | 07-NOV-11 | HS | | | %SOL |
| MC5218-4 | SW846 8015 | 07-NOV-11 15:19 | WS | | | V8015GRO |
| MC5218-4 | SW846 8260B | 08-NOV-11 13:58 | AMY | | | V8260SL |
| MC5218-4 | SW846-8015 | 12-NOV-11 00:48 | KD | 10-NOV-11 | MEW | B8015DROORO |
| MC5218-5 | Collected: 01-NOV-11 10:05 By: RH | | Received: 04-NOV-11 By: JB | | | |
| VMP-45 (30-31)110111 | | | | | | |
| MC5218-5 | SM21 2540 B MOD. | 07-NOV-11 | HS | | | %SOL |
| MC5218-5 | SW846 8015 | 07-NOV-11 18:01 | WS | | | V8015GRO |
| MC5218-5 | SW846 8260B | 10-NOV-11 19:50 | GK | | | V8260SL |
| MC5218-5 | SW846-8015 | 12-NOV-11 02:21 | KD | 10-NOV-11 | MEW | B8015DROORO |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC5218

URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC5218-6 | Collected: 01-NOV-11 10:05 By: RH | | Received: 04-NOV-11 By: JB | | | |
| VMP-45 (30-31)110111-DUP | | | | | | |
| MC5218-6 | SM21 2540 B MOD. | 07-NOV-11 | HS | | | %SOL |
| MC5218-6 | SW846 8015 | 07-NOV-11 18:42 | WS | | | V8015GRO |
| MC5218-6 | SW846 8260B | 08-NOV-11 17:02 | AMY | | | V8260SL |
| MC5218-6 | SW846-8015 | 12-NOV-11 03:07 | KD | 10-NOV-11 | MEW | B8015DROORO |
| MC5218-7 | Collected: 01-NOV-11 15:30 By: RH | | Received: 04-NOV-11 By: JB | | | |
| VMP-44 (30-31)110111-EB | | | | | | |
| MC5218-7 | SW846-8015 | 11-NOV-11 04:06 | KD | 08-NOV-11 | CA | B8015DROORO |
| MC5218-7 | SW846 8260B | 11-NOV-11 17:36 | EK | | | V8260SL |
| MC5218-7 | SW846 8015 | 13-NOV-11 17:26 | WS | | | V8015GRO |
| MC5218-8 | Collected: 01-NOV-11 00:00 By: RH | | Received: 04-NOV-11 By: JB | | | |
| TB-110111 | | | | | | |
| MC5218-8 | SW846 8260B | 11-NOV-11 18:04 | EK | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 11/04/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC5218-1.1 | Walk In Ref #9 | Hamid Siamak | 11/07/11 08:21 | Retrieve from Storage |
| MC5218-1.1 | Hamid Siamak | Walk In Ref #9 | 11/07/11 10:03 | Return to Storage |
| MC5218-1.1 | Walk In Ref #9 | Francisco Castellanos | 11/10/11 11:19 | Retrieve from Storage |
| MC5218-1.1 | Francisco Castellanos | Walk In Ref #9 | 11/11/11 09:27 | Return to Storage |
| MC5218-1.3 | VOC Ref #10 | Amy Min Yang | 11/08/11 12:14 | Retrieve from Storage |
| MC5218-1.3 | Amy Min Yang | GCMSV | 11/08/11 12:14 | Load on Instrument |
| MC5218-1.3 | GCMSV | Amy Min Yang | 11/14/11 07:40 | Unload from Instrument |
| MC5218-1.3 | Amy Min Yang | VOC Ref #10 | 11/14/11 07:40 | Return to Storage |
| MC5218-1.5 | VOC Ref #10 | Amy Min Yang | 11/05/11 11:28 | Retrieve from Storage |
| MC5218-1.5 | Amy Min Yang | VOC Ref #10 | 11/05/11 11:29 | Return to Storage |
| MC5218-1.5 | VOC Ref #10 | Anthony Franciosa | 11/07/11 10:14 | Retrieve from Storage |
| MC5218-1.5 | Anthony Franciosa | GCBH | 11/07/11 10:14 | Load on Instrument |
| MC5218-1.5 | GCBH | Anthony Franciosa | 11/07/11 15:26 | Unload from Instrument |
| MC5218-1.5 | Anthony Franciosa | VOC Ref #10 | 11/07/11 15:26 | Return to Storage |
| MC5218-2.1 | Walk In Ref #9 | Hamid Siamak | 11/07/11 08:21 | Retrieve from Storage |
| MC5218-2.1 | Hamid Siamak | Walk In Ref #9 | 11/07/11 10:03 | Return to Storage |
| MC5218-2.2 | Walk In Ref #9 | Francisco Castellanos | 11/10/11 11:19 | Retrieve from Storage |
| MC5218-2.2 | Francisco Castellanos | Walk In Ref #9 | 11/11/11 09:27 | Return to Storage |
| MC5218-2.3 | VOC Ref #10 | Amy Min Yang | 11/08/11 12:14 | Retrieve from Storage |
| MC5218-2.3 | Amy Min Yang | GCMSV | 11/08/11 12:14 | Load on Instrument |
| MC5218-2.3 | GCMSV | Amy Min Yang | 11/14/11 07:40 | Unload from Instrument |
| MC5218-2.3 | Amy Min Yang | VOC Ref #10 | 11/14/11 07:40 | Return to Storage |
| MC5218-2.5 | VOC Ref #10 | Amy Min Yang | 11/05/11 11:28 | Retrieve from Storage |
| MC5218-2.5 | Amy Min Yang | VOC Ref #10 | 11/05/11 11:29 | Return to Storage |
| MC5218-2.5 | VOC Ref #10 | Anthony Franciosa | 11/07/11 10:14 | Retrieve from Storage |
| MC5218-2.5 | Anthony Franciosa | GCBH | 11/07/11 10:14 | Load on Instrument |
| MC5218-2.5 | GCBH | Anthony Franciosa | 11/07/11 15:26 | Unload from Instrument |
| MC5218-2.5 | Anthony Franciosa | VOC Ref #10 | 11/07/11 15:26 | Return to Storage |
| MC5218-3.1 | Walk In Ref #9 | Hamid Siamak | 11/07/11 08:21 | Retrieve from Storage |
| MC5218-3.1 | Hamid Siamak | Walk In Ref #9 | 11/07/11 10:03 | Return to Storage |
| MC5218-3.2 | Walk In Ref #9 | Francisco Castellanos | 11/10/11 11:19 | Retrieve from Storage |
| MC5218-3.2 | Francisco Castellanos | Walk In Ref #9 | 11/11/11 09:27 | Return to Storage |
| MC5218-3.3 | VOC Ref #10 | Amy Min Yang | 11/08/11 12:14 | Retrieve from Storage |
| MC5218-3.3 | Amy Min Yang | GCMSV | 11/08/11 12:14 | Load on Instrument |
| MC5218-3.3 | GCMSV | Amy Min Yang | 11/14/11 07:40 | Unload from Instrument |

# Accutest Internal Chain of Custody

Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 11/04/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC5218-3.3 | Amy Min Yang | VOC Ref #10 | 11/14/11 07:40 | Return to Storage |
| MC5218-3.6 | VOC Ref #10 | Amy Min Yang | 11/05/11 11:28 | Retrieve from Storage |
| MC5218-3.6 | Amy Min Yang | VOC Ref #10 | 11/05/11 11:29 | Return to Storage |
| MC5218-3.6 | VOC Ref #10 | Anthony Franciosa | 11/07/11 10:14 | Retrieve from Storage |
| MC5218-3.6 | Anthony Franciosa | GCBH | 11/07/11 10:14 | Load on Instrument |
| MC5218-3.6 | GCBH | Anthony Franciosa | 11/07/11 15:26 | Unload from Instrument |
| MC5218-3.6 | Anthony Franciosa | VOC Ref #10 | 11/07/11 15:26 | Return to Storage |
| MC5218-4.1 | Walk In Ref #9 | Hamid Siamak | 11/07/11 08:21 | Retrieve from Storage |
| MC5218-4.1 | Hamid Siamak | Walk In Ref #9 | 11/07/11 10:03 | Return to Storage |
| MC5218-4.1 | Walk In Ref #9 | Francisco Castellanos | 11/10/11 11:19 | Retrieve from Storage |
| MC5218-4.1 | Francisco Castellanos | Walk In Ref #9 | 11/11/11 09:27 | Return to Storage |
| MC5218-4.6 | VOC Ref #10 | Amy Min Yang | 11/08/11 12:14 | Retrieve from Storage |
| MC5218-4.6 | Amy Min Yang | GCMSV | 11/08/11 12:14 | Load on Instrument |
| MC5218-4.6 | GCMSV | Amy Min Yang | 11/14/11 07:40 | Unload from Instrument |
| MC5218-4.6 | Amy Min Yang | VOC Ref #10 | 11/14/11 07:40 | Return to Storage |
| MC5218-4.7 | VOC Ref #10 | Amy Min Yang | 11/08/11 12:14 | Retrieve from Storage |
| MC5218-4.7 | Amy Min Yang | GCMSV | 11/08/11 12:14 | Load on Instrument |
| MC5218-4.7 | GCMSV | Amy Min Yang | 11/14/11 07:40 | Unload from Instrument |
| MC5218-4.7 | Amy Min Yang | VOC Ref #10 | 11/14/11 07:40 | Return to Storage |
| MC5218-4.8 | VOC Ref #10 | Amy Min Yang | 11/08/11 12:14 | Retrieve from Storage |
| MC5218-4.8 | Amy Min Yang | GCMSV | 11/08/11 12:14 | Load on Instrument |
| MC5218-4.8 | GCMSV | Amy Min Yang | 11/14/11 07:40 | Unload from Instrument |
| MC5218-4.8 | Amy Min Yang | VOC Ref #10 | 11/14/11 07:40 | Return to Storage |
| MC5218-4.11 | VOC Ref #10 | Amy Min Yang | 11/05/11 11:28 | Retrieve from Storage |
| MC5218-4.11 | Amy Min Yang | VOC Ref #10 | 11/05/11 11:29 | Return to Storage |
| MC5218-4.11 | VOC Ref #10 | Anthony Franciosa | 11/07/11 10:14 | Retrieve from Storage |
| MC5218-4.11 | Anthony Franciosa | GCBH | 11/07/11 10:14 | Load on Instrument |
| MC5218-4.11 | GCBH | Anthony Franciosa | 11/07/11 15:26 | Unload from Instrument |
| MC5218-4.11 | Anthony Franciosa | VOC Ref #10 | 11/07/11 15:26 | Return to Storage |
| MC5218-5.1 | Walk In Ref #9 | Hamid Siamak | 11/07/11 08:21 | Retrieve from Storage |
| MC5218-5.1 | Hamid Siamak | Walk In Ref #9 | 11/07/11 10:03 | Return to Storage |
| MC5218-5.1 | Walk In Ref #9 | Francisco Castellanos | 11/10/11 11:19 | Retrieve from Storage |
| MC5218-5.1 | Francisco Castellanos | Walk In Ref #9 | 11/11/11 09:27 | Return to Storage |
| MC5218-5.5 | VOC Ref #10 | Amy Min Yang | 11/05/11 11:28 | Retrieve from Storage |
| MC5218-5.5 | Amy Min Yang | VOC Ref #10 | 11/05/11 11:29 | Return to Storage |
| MC5218-5.5 | VOC Ref #10 | Anthony Franciosa | 11/07/11 10:14 | Retrieve from Storage |

# Accutest Internal Chain of Custody



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL
Received: 11/04/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC5218-5.5 | Anthony Franciosa | GCBH | 11/07/11 10:14 | Load on Instrument |
| MC5218-5.5 | GCBH | Anthony Franciosa | 11/07/11 15:26 | Unload from Instrument |
| MC5218-5.5 | Anthony Franciosa | VOC Ref #10 | 11/07/11 15:26 | Return to Storage |
| MC5218-5.6 | VOC Ref #10 | Gary Krasinski | 11/10/11 10:17 | Retrieve from Storage |
| MC5218-5.6 | Gary Krasinski | VOC Ref #10 | 11/11/11 09:03 | Return to Storage |
| MC5218-6.1 | Walk In Ref #9 | Hamid Siamak | 11/07/11 08:21 | Retrieve from Storage |
| MC5218-6.1 | Hamid Siamak | Walk In Ref #9 | 11/07/11 10:03 | Return to Storage |
| MC5218-6.2 | Walk In Ref #9 | Francisco Castellanos | 11/10/11 11:19 | Retrieve from Storage |
| MC5218-6.2 | Francisco Castellanos | Walk In Ref #9 | 11/11/11 09:27 | Return to Storage |
| MC5218-6.3 | VOC Ref #10 | Amy Min Yang | 11/08/11 12:14 | Retrieve from Storage |
| MC5218-6.3 | Amy Min Yang | GCMSV | 11/08/11 12:14 | Load on Instrument |
| MC5218-6.3 | GCMSV | Amy Min Yang | 11/14/11 07:40 | Unload from Instrument |
| MC5218-6.3 | Amy Min Yang | VOC Ref #10 | 11/14/11 07:40 | Return to Storage |
| MC5218-6.5 | VOC Ref #10 | Amy Min Yang | 11/05/11 11:28 | Retrieve from Storage |
| MC5218-6.5 | Amy Min Yang | VOC Ref #10 | 11/05/11 11:29 | Return to Storage |
| MC5218-6.5 | VOC Ref #10 | Anthony Franciosa | 11/07/11 10:14 | Retrieve from Storage |
| MC5218-6.5 | Anthony Franciosa | GCBH | 11/07/11 10:14 | Load on Instrument |
| MC5218-6.5 | GCBH | Anthony Franciosa | 11/07/11 15:26 | Unload from Instrument |
| MC5218-6.5 | Anthony Franciosa | VOC Ref #10 | 11/07/11 15:26 | Return to Storage |
| MC5218-7.1 | Walk In Ref #22 | Bijan Jafari | 11/08/11 13:00 | Retrieve from Storage |
| MC5218-7.1 | Bijan Jafari | | 11/15/11 09:44 | Depleted |
| MC5218-7.3 | VOC Ref #5 | Anthony Franciosa | 11/12/11 08:48 | Retrieve from Storage |
| MC5218-7.3 | Anthony Franciosa | GCBH | 11/12/11 08:48 | Load on Instrument |
| MC5218-7.3 | GCBH | Anthony Franciosa | 11/14/11 07:09 | Unload from Instrument |
| MC5218-7.3 | Anthony Franciosa | VOC Ref #5 | 11/14/11 07:09 | Return to Storage |
| MC5218-7.4 | VOC Ref #1 | Emily Kozlowski | 11/11/11 16:05 | Retrieve from Storage |
| MC5218-7.4 | Emily Kozlowski | GCMSL | 11/11/11 16:05 | Load on Instrument |
| MC5218-7.4 | GCMSL | Emily Kozlowski | 11/14/11 13:14 | Unload from Instrument |
| MC5218-7.4 | Emily Kozlowski | VOC Ref #1 | 11/14/11 13:14 | Return to Storage |
| MC5218-8.1 | VOC Ref #1 | Emily Kozlowski | 11/11/11 16:05 | Retrieve from Storage |
| MC5218-8.1 | Emily Kozlowski | GCMSL | 11/11/11 16:05 | Load on Instrument |
| MC5218-8.1 | GCMSL | Emily Kozlowski | 11/14/11 13:14 | Unload from Instrument |
| MC5218-8.1 | Emily Kozlowski | VOC Ref #1 | 11/14/11 13:14 | Return to Storage |

New England ACCUTEST LABORATORIES



## GC/MS Volatiles

## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV140-MB | V3151.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-1, MC5218-2, MC5218-3, MC5218-4, MC5218-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 9.2 | 5.0 | 5.0 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.094 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.15 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.22 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.I | ng/kg | |
| 96-12-8 | I,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.25 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary

Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV140-MB | V3151.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-1, MC5218-2, MC5218-3, MC5218-4, MC5218-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorohutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.84 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.36 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.64 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV140-MB | V3151.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-1, MC5218-2, MC5218-3, MC5218-4, MC5218-6

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 106% | 70-130% |
| 2037-26-5 | Toluene-D8 | 104% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 88% | 70-130% |

# Method Blank Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1878-MB | K56054.D | 1 | 11/10/11 | GK | n/a | n/a | MSK1878 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 250 | 250 | ug/kg | |
| 107-02-8 | Acrolein | ND | 1300 | 850 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 250 | 100 | ug/kg | |
| 71-43-2 | Benzene | ND | 25 | 6.3 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 250 | 9.5 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 250 | 52 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 100 | 10 | ug/kg | |
| 75-25-2 | Bromoform | ND | 100 | 24 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 100 | 34 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 250 | 59 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 250 | 63 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 250 | 8.3 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 250 | 33 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 250 | 48 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 100 | 11 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 100 | 4.7 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 250 | 13 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 250 | 250 | ug/kg | |
| 67-66-3 | Chloroform | ND | 100 | 7.4 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 250 | 11 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 250 | 7.0 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 250 | 56 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 250 | 250 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 100 | 33 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 100 | 9.6 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 100 | 7.5 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 100 | 7.2 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 100 | 7.0 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 100 | 17 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 100 | 7.6 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 100 | 7.3 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 100 | 16 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 100 | 14 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 100 | 13 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 100 | 11 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 250 | 58 | ug/kg | |

# Method Blank Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1878-MB | K56054.D | 1 | 11/10/11 | GK | n/a | n/a | MSK1878 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-5

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 250 | 9.2 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 250 | 9.6 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 100 | 50 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 100 | 34 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 1300 | 1300 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 250 | 160 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 100 | 6.5 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 250 | 250 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 250 | 52 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 250 | 7.9 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 250 | 8.1 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 100 | 31 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 250 | 42 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 250 | 15 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 100 | 18 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 250 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 250 | 8.1 | ug/kg | |
| 100-42-5 | Styrene | ND | 250 | 25 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 250 | 50 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 100 | 8.8 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 100 | 8.4 | ug/kg | |
| 108-88-3 | Toluene | ND | 250 | 9.0 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 250 | 55 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 250 | 250 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 100 | 9.2 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 100 | 13 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 100 | 9.8 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 100 | 46 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 250 | 10 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 250 | 7.9 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 250 | 9.1 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 250 | 59 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 100 | 32 | ug/kg | |
| | m,p-Xylene | ND | 100 | 13 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 100 | 9.2 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 100 | 6.3 | ug/kg | |

# Method Blank Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1878-MB | K56054.D | 1 | 11/10/11 | GK | n/a | n/a | MSK1878 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-5

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 128% | 70-130% |
| 2037-26-5 | Toluene-D8 | 115% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 128% | 70-130% |

# Method Blank Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSL1960-MB | L58209.D | 1 | 11/11/11 | EK | n/a | n/a | MSL1960 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-7, MC5218-8

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |

# Method Blank Summary

Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSL1960-MB | L58209.D | 1 | 11/11/11 | EK | n/a | n/a | MSL1960 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-7, MC5218-8

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 5.0 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.70 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

# Method Blank Summary

Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSL1960-MB | L58209.D | 1 | 11/11/11 | EK | n/a | n/a | MSL1960 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-7, MC5218-8

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dihromofluoromethane | 89% | 70-130% |
| 2037-26-5 | Toluene-D8 | 88% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 84% | 70-130% |

| CAS No. | Tentatively Identified Compounds | R.T. | Est. Conc. | Units | Q |
|---|---|---|---|---|---|
| | Total TIC, Volatile | | 0 | ug/l | |

# Blank Spike Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV140-BS | V3150.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-1, MC5218-2, MC5218-3, MC5218-4, MC5218-6

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 52.8 | 106 | 70-130 |
| 107-02-8 | Acrolein | 250 | 466 | 186* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 300 | 600* a | 70-130 |
| 71-43-2 | Benzene | 50 | 54.9 | 110 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 52.9 | 106 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 57.4 | 115 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 52.8 | 106 | 70-130 |
| 75-25-2 | Bromoform | 50 | 50.8 | 102 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 56.8 | 114 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 57.8 | 116 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 53.2 | 106 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 54.0 | 108 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 53.1 | 106 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 51.0 | 102 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 60.5 | 121 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 55.3 | 111 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 54.7 | 109 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 39.8 | 80 | 10-160 |
| 67-66-3 | Chloroform | 50 | 56.4 | 113 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 48.9 | 98 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 50.7 | 101 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 51.4 | 103 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 45.7 | 91 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 54.7 | 109 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 57.9 | 116 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 52.3 | 105 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 52.0 | 104 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 50.8 | 102 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 55.0 | 110 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 56.7 | 113 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 56.3 | 113 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 59.5 | 119 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 55.8 | 112 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 56.6 | 113 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 55.6 | 111 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 55.4 | 111 | 70-130 |

# Blank Spike Summary

Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV140-BS | V3150.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-1, MC5218-2, MC5218-3, MC5218-4, MC5218-6

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 50.9 | 102 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 56.9 | 114 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 51.8 | 104 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 54.1 | 108 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 230 | 92 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 50.3 | 101 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 56.4 | 113 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 54.3 | 109 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 51.7 | 103 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 60.6 | 121 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 55.5 | 111 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 57.9 | 116 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 53.8 | 108 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 58.4 | 117 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 53.5 | 107 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 53.0 | 106 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 53.1 | 106 | 70-130 |
| 100-42-5 | Styrene | 50 | 58.2 | 116 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 61.3 | 123 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 51.7 | 103 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 56.4 | 113 | 70-130 |
| 108-88-3 | Toluene | 50 | 55.9 | 112 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 52.4 | 105 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 53.8 | 108 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 52.2 | 104 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 55.2 | 110 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 57.1 | 114 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 55.3 | 111 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 48.3 | 97 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 52.3 | 105 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 52.1 | 104 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 36.0 | 72 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 45.6 | 91 | 70-130 |
| | m,p-Xylene | 100 | 112 | 112 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 57.3 | 115 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 170 | 113 | 70-130 |

# Blank Spike Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSV140-BS | V3150.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-1, MC5218-2, MC5218-3, MC5218-4, MC5218-6

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 111% | 70-130% |
| 2037-26-5 | Toluene-D8 | 106% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 94% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1878-BS | K56052.D | 1 | 11/10/11 | GK | n/a | n/a | MSK1878 |
| MSK1878-BSD | K56053.D | 1 | 11/10/11 | GK | n/a | n/a | MSK1878 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-5

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 2500 | 4360 | 174* a | 4360 | 174* a | 0 | 70-130/25 |
| 107-02-8 | Acrolein | 12500 | 24500 | 196* a | 24600 | 197* a | 0 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 2500 | 3030 | 121 | 3050 | 122 | 1 | 70-130/25 |
| 71-43-2 | Benzene | 2500 | 2710 | 108 | 2680 | 107 | 1 | 70-130/25 |
| 108-86-1 | Bromobenzene | 2500 | 2630 | 105 | 2580 | 103 | 2 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 2500 | 2770 | 111 | 2760 | 110 | 0 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 2500 | 2810 | 112 | 2760 | 110 | 2 | 70-130/25 |
| 75-25-2 | Bromoform | 2500 | 2730 | 109 | 2680 | 107 | 2 | 70-130/25 |
| 74-83-9 | Bromomethane | 2500 | 2880 | 115 | 2790 | 112 | 3 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 2500 | 3630 | 145* a | 3520 | 141* a | 3 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 2500 | 2730 | 109 | 2670 | 107 | 2 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 2500 | 2720 | 109 | 2670 | 107 | 2 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 2500 | 2710 | 108 | 2660 | 106 | 2 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 2500 | 2960 | 118 | 2860 | 114 | 3 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 2500 | 2780 | 111 | 2720 | 109 | 2 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 2500 | 2650 | 106 | 2600 | 104 | 2 | 70-130/25 |
| 75-00-3 | Chloroethane | 2500 | 3050 | 122 | 2990 | 120 | 2 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 2500 | 1320 | 53 | 1340 | 54 | 2 | 10-160/25 |
| 67-66-3 | Chloroform | 2500 | 2910 | 116 | 2840 | 114 | 2 | 70-130/25 |
| 74-87-3 | Chloromethane | 2500 | 2560 | 102 | 2490 | 100 | 3 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 2500 | 2700 | 108 | 2660 | 106 | 1 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 2500 | 2790 | 112 | 2740 | 110 | 2 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 2500 | 2440 | 98 | 2400 | 96 | 2 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 2500 | 2780 | 111 | 2770 | 111 | 0 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 2500 | 2690 | 108 | 2670 | 107 | 1 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 2500 | 2640 | 106 | 2590 | 104 | 2 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 2500 | 2640 | 106 | 2570 | 103 | 3 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 2500 | 2730 | 109 | 2670 | 107 | 2 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 2500 | 2750 | 110 | 2570 | 103 | 7 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 2500 | 2880 | 115 | 2830 | 113 | 2 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 2500 | 2640 | 106 | 2580 | 103 | 2 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 2500 | 3000 | 120 | 2960 | 118 | 1 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 2500 | 2790 | 112 | 2710 | 108 | 3 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 2500 | 2860 | 114 | 2790 | 112 | 2 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 2500 | 2690 | 108 | 2640 | 106 | 2 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 2500 | 2700 | 108 | 2650 | 106 | 2 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1878-BS | K56052.D | 1 | 11/10/11 | GK | n/a | n/a | MSK1878 |
| MSK1878-BSD | K56053.D | 1 | 11/10/11 | GK | n/a | n/a | MSK1878 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-5

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 2500 | 3240 | 130 | 3080 | 123 | 5 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 2500 | 2740 | 110 | 2680 | 107 | 2 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 2500 | 2760 | 110 | 2730 | 109 | 1 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 2500 | 2980 | 119 | 2940 | 118 | 1 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 12500 | 13500 | 108 | 12800 | 102 | 5 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 2500 | 2900 | 116 | 2880 | 115 | 1 | 76-141/25 |
| 100-41-4 | Ethylbenzene | 2500 | 2710 | 108 | 2650 | 106 | 2 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 2500 | 2200 | 88 | 2100 | 84 | 5 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 2500 | 3040 | 122 | 3030 | 121 | 0 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 2500 | 3190 | 128 | 3120 | 125 | 2 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 2500 | 2800 | 112 | 2720 | 109 | 3 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 2500 | 2840 | 114 | 2800 | 112 | 1 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 2500 | 2850 | 114 | 2870 | 115 | 1 | 70-130/25 |
| 74-95-3 | Methylene bromide | 2500 | 2740 | 110 | 2730 | 109 | 0 | 70-130/25 |
| 75-09-2 | Methylene chloride | 2500 | 3030 | 121 | 3000 | 120 | 1 | 70-130/25 |
| 91-20-3 | Naphthalene | 2500 | 2140 | 86 | 2120 | 85 | 1 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 2500 | 2810 | 112 | 2750 | 110 | 2 | 70-130/25 |
| 100-42-5 | Styrene | 2500 | 2770 | 111 | 2730 | 109 | 1 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 2500 | 2660 | 106 | 2640 | 106 | 1 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 2500 | 2970 | 119 | 2950 | 118 | 1 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 2500 | 2570 | 103 | 2460 | 98 | 4 | 70-130/25 |
| 108-88-3 | Toluene | 2500 | 2740 | 110 | 2680 | 107 | 2 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 2500 | 1800 | 72 | 1790 | 72 | 1 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 2500 | 2130 | 85 | 2110 | 84 | 1 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 2500 | 2920 | 117 | 2830 | 113 | 3 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 2500 | 2780 | 111 | 2760 | 110 | 1 | 70-130/25 |
| 79-01-6 | Trichloroethene | 2500 | 2760 | 110 | 2690 | 108 | 3 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 2500 | 2970 | 119 | 2840 | 114 | 4 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 2500 | 2950 | 118 | 2910 | 116 | 1 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 2500 | 2710 | 108 | 2650 | 106 | 2 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 2500 | 2720 | 109 | 2650 | 106 | 3 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 2500 | 1980 | 79 | 1960 | 78 | 1 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 2500 | 2510 | 100 | 2360 | 94 | 6 | 70-130/25 |
| | m,p-Xylene | 5000 | 5470 | 109 | 5390 | 108 | 1 | 70-130/25 |
| 95-47-6 | o-Xylene | 2500 | 2690 | 108 | 2620 | 105 | 3 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 7500 | 8160 | 109 | 8010 | 107 | 2 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, 1L

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSK1878-BS | K56052.D | 1 | 11/10/11 | GK | n/a | n/a | MSK1878 |
| MSK1878-BSD | K56053.D | 1 | 11/10/11 | GK | n/a | n/a | MSK1878 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-5

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 121% | 121% | 70-130% |
| 2037-26-5 | Toluene-D8 | 115% | 113% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 117% | 115% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSL1960-BS | L58206.D | 1 | 11/11/11 | EK | n/a | n/a | MSL1960 |
| MSL1960-BSD | L58207.D | 1 | 11/11/11 | EK | n/a | n/a | MSL1960 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-7, MC5218-8

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 47.1 | 94 | 45.9 | 92 | 3 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 603 | 241* a | 591 | 236* a | 2 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 46.3 | 93 | 45.9 | 92 | 1 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 52.3 | 105 | 51.5 | 103 | 2 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 47.2 | 94 | 45.0 | 90 | 5 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 52.4 | 105 | 52.1 | 104 | 1 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 49.7 | 99 | 49.3 | 99 | 1 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 48.0 | 96 | 46.9 | 94 | 2 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 44.8 | 90 | 41.5 | 83 | 8 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 45.9 | 92 | 43.0 | 86 | 7 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 57.1 | 114 | 51.8 | 104 | 10 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 54.2 | 108 | 49.0 | 98 | 10 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 53.8 | 108 | 50.3 | 101 | 7 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 49.6 | 99 | 47.0 | 94 | 5 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 50.9 | 102 | 49.7 | 99 | 2 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 54.9 | 110 | 52.2 | 104 | 5 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 50.6 | 101 | 51.3 | 103 | 1 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 75.7 | 151* b | 53.7 | 107 | 34* b | 70-130/25 |
| 67-66-3 | Chloroform | 50 | 46.1 | 92 | 46.0 | 92 | 0 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 35.9 | 72 | 35.5 | 71 | 1 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 49.8 | 100 | 46.8 | 94 | 6 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 52.9 | 106 | 48.0 | 96 | 10 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 48.9 | 98 | 47.5 | 95 | 3 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 55.4 | 111 | 55.2 | 110 | 0 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 52.9 | 106 | 52.5 | 105 | 1 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 49.2 | 98 | 45.7 | 91 | 7 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 50.2 | 100 | 46.4 | 93 | 8 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 53.6 | 107 | 49.6 | 99 | 8 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 33.4 | 67* b | 32.3 | 65* b | 3 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 47.2 | 94 | 46.9 | 94 | 1 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 46.6 | 93 | 46.2 | 92 | 1 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 55.4 | 111 | 55.2 | 110 | 0 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 46.9 | 94 | 45.1 | 90 | 4 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 45.9 | 92 | 46.7 | 93 | 2 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 45.7 | 91 | 46.9 | 94 | 3 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 54.3 | 109 | 52.0 | 104 | 4 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSL1960-BS | L58206.D | 1 | 11/11/11 | EK | n/a | n/a | MSL1960 |
| MSL1960-BSD | L58207.D | 1 | 11/11/11 | EK | n/a | n/a | MSL1960 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-7, MC5218-8

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 53.9 | 108 | 52.7 | 105 | 2 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 52.1 | 104 | 50.4 | 101 | 3 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 48.4 | 97 | 49.4 | 99 | 2 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 52.4 | 105 | 52.1 | 104 | 1 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 231 | 92 | 232 | 93 | 0 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 42.5 | 85 | 42.1 | 84 | 1 | 77-137/25 |
| 100-41-4 | Ethylbenzene | 50 | 52.5 | 105 | 50.9 | 102 | 3 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 50.8 | 102 | 47.5 | 95 | 7 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 47.7 | 95 | 45.2 | 90 | 5 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 61.5 | 123 | 56.8 | 114 | 8 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 54.8 | 110 | 49.6 | 99 | 10 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 47.9 | 96 | 46.3 | 93 | 3 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 46.9 | 94 | 47.5 | 95 | 1 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 52.2 | 104 | 49.5 | 99 | 5 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 52.0 | 104 | 51.3 | 103 | 1 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 49.8 | 100 | 45.8 | 92 | 8 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 55.2 | 110 | 50.2 | 100 | 9 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 53.7 | 107 | 52.2 | 104 | 3 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 48.3 | 97 | 46.4 | 93 | 4 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 54.1 | 108 | 50.8 | 102 | 6 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 50.9 | 102 | 49.5 | 99 | 3 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 52.0 | 104 | 50.4 | 101 | 3 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 55.0 | 110 | 48.7 | 97 | 12 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 52.8 | 106 | 49.3 | 99 | 7 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 50.4 | 101 | 48.4 | 97 | 4 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 48.9 | 98 | 47.1 | 94 | 4 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 51.8 | 104 | 49.7 | 99 | 4 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 48.8 | 98 | 48.3 | 97 | 1 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 49.0 | 98 | 46.8 | 94 | 5 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 54.2 | 108 | 50.1 | 100 | 8 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 52.5 | 105 | 48.6 | 97 | 8 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 27.7 | 55* b | 28.7 | 57* b | 4 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 36.7 | 73 | 36.5 | 73 | 1 | 70-130/25 |
| | m,p-Xylene | 100 | 114 | 114 | 108 | 108 | 5 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 55.9 | 112 | 54.2 | 108 | 3 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 170 | 113 | 163 | 109 | 4 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSL1960-BS | L58206.D | 1 | 11/11/11 | EK | n/a | n/a | MSL1960 |
| MSL1960-BSD | L58207.D | 1 | 11/11/11 | EK | n/a | n/a | MSL1960 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-7, MC5218-8

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 84% | 85% | 70-130% |
| 2037-26-5 | Toluene-D8 | 89% | 89% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 86% | 84% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits. Blank Spike meets program technical requirements.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC5218-4MS | V3160.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |
| MC5218-4MSD | V3161.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |
| MC5218-4 | V3159.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-1, MC5218-2, MC5218-3, MC5218-4, MC5218-6

| CAS No. | Compound | MC5218-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 15.9 | B | 78.9 | 48.7 | 42* a | 44.3 | 37* a | 9 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 395 | 722 | 183* b | 605 | 159* b | 18 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 78.9 | 451 | 571* b | 440 | 578* b | 2 | 70-130/30 |
| 71-43-2 | Benzene | 1.2 | | 78.9 | 84.0 | 105 | 83.6 | 108 | 0 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 78.9 | 79.0 | 100 | 75.9 | 100 | 4 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 78.9 | 89.4 | 113 | 87.1 | 114 | 3 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 78.9 | 80.9 | 102 | 79.4 | 104 | 2 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 78.9 | 89.5 | 113 | 85.1 | 112 | 5 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 78.9 | 79.8 | 101 | 78.3 | 103 | 2 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 78.9 | 122 | 155* a | 114 | 150* a | 7 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 78.9 | 81.3 | 103 | 76.6 | 101 | 6 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 78.9 | 80.6 | 102 | 77.4 | 102 | 4 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 78.9 | 79.2 | 100 | 76.5 | 100 | 3 | 70-130/30 |
| 75-15-0 | Carbon disulfide | 6.3 | J | 78.9 | 76.6 | 89 | 75.6 | 91 | 1 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 78.9 | 89.8 | 114 | 89.7 | 118 | 0 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 78.9 | 81.7 | 104 | 80.0 | 105 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 78.9 | 78.1 | 99 | 76.2 | 100 | 2 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 78.9 | ND | 0* a | ND | 0* a | nc | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 78.9 | 83.6 | 106 | 82.1 | 108 | 2 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 78.9 | 67.7 | 86 | 69.0 | 91 | 2 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 78.9 | 73.7 | 93 | 71.2 | 93 | 3 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 78.9 | 76.0 | 96 | 72.8 | 96 | 4 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 78.9 | 104 | 132* a | 96.6 | 127 | 7 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 78.9 | 86.8 | 110 | 84.4 | 111 | 3 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 78.9 | 100 | 127 | 96.4 | 127 | 4 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 78.9 | 79.2 | 100 | 75.5 | 99 | 5 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 78.9 | 76.8 | 97 | 73.8 | 97 | 4 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 78.9 | 75.5 | 96 | 72.1 | 95 | 5 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 78.9 | 77.1 | 98 | 75.6 | 99 | 2 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 78.9 | 83.0 | 105 | 82.7 | 109 | 0 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 78.9 | 90.9 | 115 | 86.5 | 114 | 5 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 78.9 | 88.6 | 112 | 88.7 | 116 | 0 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 78.9 | 82.7 | 105 | 82.1 | 108 | 1 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 78.9 | 84.9 | 108 | 83.6 | 110 | 2 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 78.9 | 85.5 | 108 | 85.0 | 112 | 1 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 78.9 | 91.3 | 116 | 88.4 | 116 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC5218-4MS | V3160.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |
| MC5218-4MSD | V3161.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |
| MC5218-4 | V3159.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-1, MC5218-2, MC5218-3, MC5218-4, MC5218-6

| CAS No. | Compound | MC5218-4 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 78.9 | 72.9 | 92 | 69.2 | 91 | 5 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 78.9 | 86.9 | 110 | 85.5 | 112 | 2 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 78.9 | 79.3 | 100 | 77.5 | 102 | 2 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 78.9 | 88.5 | 112 | 85.5 | 112 | 3 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 395 | 482 | 122 | 463 | 122 | 4 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 78.9 | 93.7 | 119 | 89.4 | 117 | 5 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 2.8 | J | 78.9 | 85.7 | 105 | 84.3 | 107 | 2 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 78.9 | 80.9 | 102 | 73.3 | 96 | 10 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 78.9 | 92.7 | 117 | 86.8 | 114 | 7 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 78.9 | 92.3 | 117 | 89.4 | 117 | 3 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 78.9 | 83.3 | 106 | 80.6 | 106 | 3 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 78.9 | 94.6 | 120 | 92.2 | 121 | 3 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 78.9 | 124 | 157* a | 115 | 151* a | 8 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 78.9 | 98.2 | 124 | 94.0 | 123 | 4 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 78.9 | 78.3 | 99 | 77.0 | 101 | 2 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 78.9 | 104 | 132* a | 94.5 | 124 | 10 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 78.9 | 79.4 | 101 | 76.5 | 100 | 4 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 78.9 | 85.0 | 108 | 81.6 | 107 | 4 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 78.9 | 90.0 | 114 | 89.2 | 117 | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 78.9 | 97.1 | 123 | 92.3 | 121 | 5 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 78.9 | 85.0 | 108 | 82.4 | 108 | 3 | 70-130/30 |
| 108-88-3 | Toluene | 3.0 | J | 78.9 | 86.6 | 106 | 85.2 | 108 | 2 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 78.9 | 81.4 | 103 | 73.9 | 97 | 10 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 78.9 | 82.4 | 104 | 76.1 | 100 | 8 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 78.9 | 77.1 | 98 | 77.8 | 102 | 1 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 78.9 | 95.9 | 121 | 92.0 | 121 | 4 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 78.9 | 85.9 | 109 | 85.0 | 112 | 1 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 78.9 | 45.0 | 57* a | 74.8 | 98 | 50* c | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 78.9 | 91.5 | 116 | 85.2 | 112 | 7 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 78.9 | 77.6 | 98 | 74.2 | 97 | 4 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 78.9 | 76.6 | 97 | 73.3 | 96 | 4 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 78.9 | 51.7 | 65* a | 41.3 | 54* a | 22 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 78.9 | 64.1 | 81 | 62.2 | 82 | 3 | 70-130/30 |
| | m,p-Xylene | 0.96 | J | 158 | 166 | 105 | 163 | 106 | 2 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 78.9 | 84.9 | 108 | 82.8 | 109 | 3 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 0.96 | J | 237 | 251 | 106 | 246 | 107 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC5218-4MS | V3160.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |
| MC5218-4MSD | V3161.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |
| MC5218-4 | V3159.D | 1 | 11/08/11 | AMY | n/a | n/a | MSV140 |

The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-1, MC5218-2, MC5218-3, MC5218-4, MC5218-6

| CAS No. | Surrogate Recoveries | MS | MSD | MC5218-4 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 108% | 108% | 102% | 70-130% |
| 2037-26-5 | Toluene-D8 | 105% | 106% | 102% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 91% | 91% | 89% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.
(c) High RPD due to possible matrix interference and/or sample non-homogeneity.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC5314-1MS | K56058.D | 1 | 11/10/11 | GK | n/a | n/a | MSK1878 |
| MC5314-1MSD | K56059.D | 1 | 11/10/11 | GK | n/a | n/a | MSK1878 |
| MC5314-1 | K56057.D | 1 | 11/10/11 | GK | n/a | n/a | MSK1878 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-5

| CAS No. | Compound | MC5314-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 4040 | 7370 | 182* [a] | 6220 | 154* [a] | 17 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 20200 | 36400 | 180* [a] | 36600 | 181* [a] | 1 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 4040 | 5340 | 132* [a] | 5270 | 130 | 1 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 4040 | 4660 | 115 | 4500 | 111 | 3 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 4040 | 4390 | 109 | 4360 | 108 | 1 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 4040 | 4720 | 117 | 4670 | 116 | 1 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 4040 | 4880 | 121 | 4700 | 116 | 4 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 4040 | 4380 | 108 | 4390 | 109 | 0 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 4040 | 4770 | 118 | 4400 | 109 | 8 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 4040 | 6080 | 151* [a] | 6030 | 149* [a] | 1 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 4040 | 4690 | 116 | 4500 | 111 | 4 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 4040 | 4630 | 115 | 4490 | 111 | 3 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 4040 | 4630 | 115 | 4490 | 111 | 3 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 4040 | 5120 | 127 | 4830 | 120 | 6 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 4040 | 4810 | 119 | 4500 | 111 | 7 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 4040 | 4430 | 110 | 4300 | 106 | 3 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 4040 | 5300 | 131* [a] | 4940 | 122 | 7 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 4040 | 2380 | 59 | 2320 | 57 | 3 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 4040 | 5080 | 126 | 4890 | 121 | 4 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 4040 | 4560 | 113 | 4180 | 103 | 9 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 4040 | 4570 | 113 | 4450 | 110 | 3 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 4040 | 4750 | 118 | 4580 | 113 | 4 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 4040 | 4120 | 102 | 4130 | 102 | 0 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 4040 | 4560 | 113 | 4570 | 113 | 0 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 4040 | 4440 | 110 | 4480 | 111 | 1 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 4040 | 4460 | 110 | 4400 | 109 | 1 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 4040 | 4460 | 110 | 4380 | 108 | 2 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 4040 | 4630 | 115 | 4510 | 112 | 3 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 4040 | 4810 | 119 | 4380 | 108 | 9 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 4040 | 5060 | 125 | 4830 | 120 | 5 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 4040 | 4570 | 113 | 4410 | 109 | 4 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 4040 | 5280 | 131* [b] | 4950 | 123 | 6 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | 187 | | 4040 | 4940 | 118 | 4810 | 114 | 3 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 4040 | 4900 | 121 | 4710 | 117 | 4 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 4040 | 4640 | 115 | 4520 | 112 | 3 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 4040 | 4510 | 112 | 4450 | 110 | 1 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC5314-1MS | K56058.D | 1 | 11/10/11 | GK | n/a | n/a | MSK1878 |
| MC5314-1MSD | K56059.D | 1 | 11/10/11 | GK | n/a | n/a | MSK1878 |
| MC5314-1 | K56057.D | 1 | 11/10/11 | GK | n/a | n/a | MSK1878 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-5

| CAS No. | Compound | MC5314-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 4040 | 5520 | 137* [b] | 5150 | 128 | 7 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 4040 | 4720 | 117 | 4410 | 109 | 7 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 4040 | 4840 | 120 | 4610 | 114 | 5 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 4040 | 5150 | 128 | 4930 | 122 | 4 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 20200 | 23500 | 116 | 22300 | 110 | 5 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 4040 | 5060 | 125 | 4900 | 121 | 3 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 4040 | 4570 | 113 | 4450 | 110 | 3 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 4040 | 3860 | 96 | 3750 | 93 | 3 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 4040 | 5240 | 130 | 5330 | 132* [b] | 2 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 4040 | 5400 | 134* [b] | 5290 | 131* [b] | 2 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 4040 | 4760 | 118 | 4580 | 113 | 4 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 4040 | 4930 | 122 | 4830 | 120 | 2 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 4040 | 5090 | 126 | 4980 | 123 | 2 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 4040 | 4710 | 117 | 4600 | 114 | 2 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 4040 | 5350 | 132* [b] | 5130 | 127 | 4 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 4040 | 3840 | 95 | 4010 | 99 | 4 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 4040 | 4750 | 118 | 4620 | 114 | 3 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 4040 | 4620 | 114 | 4580 | 113 | 1 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 4040 | 4450 | 110 | 4380 | 108 | 2 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 4040 | 4910 | 122 | 4880 | 121 | 1 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | 214 | | 4040 | 4500 | 106 | 4330 | 102 | 4 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 4040 | 4820 | 119 | 4520 | 112 | 6 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 4040 | 3240 | 80 | 3350 | 83 | 3 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 4040 | 3700 | 92 | 3690 | 91 | 0 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 4040 | 5140 | 127 | 4870 | 121 | 5 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 4040 | 4720 | 117 | 4610 | 114 | 2 | 70-130/30 |
| 79-01-6 | Trichloroethene | 6640 | | 4040 | 12100 | 135* [b] | 11600 | 123 | 4 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 4040 | 5190 | 129 | 4780 | 118 | 8 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 4040 | 4960 | 123 | 4970 | 123 | 0 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 4040 | 4650 | 115 | 4520 | 112 | 3 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 4040 | 4630 | 115 | 4420 | 109 | 5 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 4040 | 2670 | 66* [b] | 2460 | 61* [b] | 8 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 4040 | 3090 | 77 | 2810 | 70 | 9 | 70-130/30 |
| | m,p-Xylene | ND | | 8080 | 9210 | 114 | 9040 | 112 | 2 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 4040 | 4560 | 113 | 4440 | 110 | 3 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 12100 | 13800 | 114 | 13500 | 111 | 2 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Bateh | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC5314-1MS | K56058.D | 1 | 11/10/11 | GK | n/a | n/a | MSK1878 |
| MC5314-1MSD | K56059.D | 1 | 11/10/11 | GK | n/a | n/a | MSK1878 |
| MC5314-1 | K56057.D | 1 | 11/10/11 | GK | n/a | n/a | MSK1878 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-5

| CAS No. | Surrogate Recoveries | MS | MSD | MC5314-1 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 122% | 117% | 120% | 70-130% |
| 2037-26-5 | Toluene-D8 | 117% | 111% | 115% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 115% | 113% | 119% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC5219-1MS | L58227.D | 1 | 11/12/11 | EK | n/a | n/a | MSL1960 |
| MC5219-1MSD | L58228.D | 1 | 11/12/11 | EK | n/a | n/a | MSL1960 |
| MC5219-1 | L58222.D | 1 | 11/11/11 | EK | n/a | n/a | MSL1960 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-7, MC5218-8

| CAS No. | Compound | MC5219-1 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 50 | 28.6 | 57* [a] | 27.0 | 54* [a] | 6 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 250 | 405 | 162* [b] | 470 | 188* [b] | 15 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 50 | 42.1 | 84 | 45.7 | 91 | 8 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 50 | 50.4 | 101 | 54.6 | 109 | 8 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 50 | 45.4 | 91 | 50.4 | 101 | 10 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 50 | 49.3 | 99 | 56.2 | 112 | 13 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 50 | 46.6 | 93 | 50.2 | 100 | 7 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 50 | 42.9 | 86 | 45.1 | 90 | 5 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 50 | 21.9 | 44* [a] | 37.4 | 75 | 52* [c] | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 50 | 36.1 | 72 | 39.1 | 78 | 8 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 50 | 51.6 | 103 | 56.5 | 113 | 9 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 50 | 49.8 | 100 | 56.1 | 112 | 12 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 50 | 51.6 | 103 | 56.8 | 114 | 10 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 50 | 49.6 | 99 | 54.9 | 110 | 10 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 50 | 48.1 | 96 | 52.2 | 104 | 8 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 50 | 54.2 | 108 | 58.9 | 118 | 8 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 50 | 49.2 | 98 | 55.0 | 110 | 11 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 50 | 53.9 | 108 | 61.1 | 122 | 13 | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 50 | 45.4 | 91 | 49.8 | 100 | 9 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 50 | 31.4 | 63* [a] | 34.3 | 69* [a] | 9 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 50 | 47.8 | 96 | 52.8 | 106 | 10 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 50 | 49.0 | 98 | 54.2 | 108 | 10 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 50 | 42.0 | 84 | 44.9 | 90 | 7 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 50 | 52.9 | 106 | 56.5 | 113 | 7 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 50 | 49.4 | 99 | 53.1 | 106 | 7 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 50 | 46.0 | 92 | 50.1 | 100 | 9 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 50 | 46.8 | 94 | 51.5 | 103 | 10 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 50 | 50.4 | 101 | 56.2 | 112 | 11 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 50 | 33.4 | 67* [a] | 34.7 | 69* [a] | 4 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 50 | 46.3 | 93 | 49.6 | 99 | 7 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 50 | 42.9 | 86 | 46.6 | 93 | 8 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 50 | 55.3 | 111 | 59.8 | 120 | 8 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | 5.3 | | 50 | 49.5 | 88 | 53.4 | 96 | 8 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 50 | 46.0 | 92 | 52.2 | 104 | 13 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 50 | 44.5 | 89 | 47.7 | 95 | 7 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 50 | 52.1 | 104 | 55.0 | 110 | 5 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC5219-1MS | L58227.D | 1 | 11/12/11 | EK | n/a | n/a | MSL1960 |
| MC5219-1MSD | L58228.D | 1 | 11/12/11 | EK | n/a | n/a | MSL1960 |
| MC5219-1 | L58222.D | 1 | 11/11/11 | EK | n/a | n/a | MSL1960 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-7, MC5218-8

| CAS No. | Compound | MC5219-1 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 50 | 44.3 | 89 | 49.0 | 98 | 10 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 50 | 48.2 | 96 | 52.2 | 104 | 8 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 50 | 46.2 | 92 | 49.5 | 99 | 7 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 50 | 45.9 | 92 | 50.8 | 102 | 10 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 250 | 166 | 66* [a] | 195 | 78 | 16 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 50 | 42.3 | 85 | 45.7 | 91 | 8 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 50 | 55.2 | 110 | 57.9 | 116 | 5 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 50 | 44.9 | 90 | 52.0 | 104 | 15 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 50 | 35.5 | 71 | 38.3 | 77 | 8 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 50 | 59.2 | 118 | 65.5 | 131* [a] | 10 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 50 | 51.6 | 103 | 57.3 | 115 | 10 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 50 | 43.7 | 87 | 48.8 | 98 | 11 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 50 | 41.4 | 83 | 44.8 | 90 | 8 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 50 | 46.6 | 93 | 52.2 | 104 | 11 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 50 | 50.3 | 101 | 55.1 | 110 | 9 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 50 | 41.9 | 84 | 47.9 | 96 | 13 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 50 | 52.3 | 105 | 57.9 | 116 | 10 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 50 | 50.4 | 101 | 54.2 | 108 | 7 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 50 | 47.0 | 94 | 49.5 | 99 | 5 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 50 | 47.2 | 94 | 51.0 | 102 | 8 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 50 | 50.0 | 100 | 56.2 | 112 | 12 | 70-130/30 |
| 108-88-3 | Toluene | 0.61 | J | 50 | 49.9 | 99 | 55.0 | 109 | 10 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 50 | 47.2 | 94 | 53.9 | 108 | 13 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 50 | 47.3 | 95 | 52.6 | 105 | 11 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 50 | 48.5 | 97 | 52.4 | 105 | 8 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 50 | 44.2 | 88 | 47.8 | 96 | 8 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 50 | 48.9 | 98 | 53.0 | 106 | 8 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 50 | 47.6 | 95 | 52.5 | 105 | 10 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 50 | 40.5 | 81 | 44.3 | 89 | 9 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 50 | 53.3 | 107 | 56.7 | 113 | 6 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 50 | 50.1 | 100 | 55.0 | 110 | 9 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 50 | 38.4 | 77 | 40.9 | 82 | 6 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 50 | 35.7 | 71 | 40.6 | 81 | 13 | 70-130/30 |
| | m,p-Xylene | ND | | 100 | 120 | 120 | 123 | 123 | 2 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 50 | 56.1 | 112 | 58.7 | 117 | 5 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 150 | 176 | 117 | 182 | 121 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC5219-1MS | L58227.D | 1 | 11/12/11 | EK | n/a | n/a | MSL1960 |
| MC5219-1MSD | L58228.D | 1 | 11/12/11 | EK | n/a | n/a | MSL1960 |
| MC5219-1 | L58222.D | 1 | 11/11/11 | EK | n/a | n/a | MSL1960 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC5218-7, MC5218-8

| CAS No. | Surrogate Recoveries | MS | MSD | MC5219-1 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dihromofluoromethane | 79% | 83% | 85% | 70-130% |
| 2037-26-5 | Toluene-D8 | 84% | 84% | 85% | 70-130% |
| 460-00-4 | 4-Bromofluorohenzene | 82% | 82% | 81% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.
(c) High RPD due to possible matrix interference and/or sample non-homogeneity.

# Volatile Internal Standard Area Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSK1878-CC1831 | Injection Date: | 11/10/11 |
| Lab File ID: | K56050.D | Injection Time: | 10:32 |
| Instrument ID: | GCMSK | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | 1S 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 180979 | 8.85 | 259892 | 9.70 | 130161 | 12.96 | 136662 | 15.52 | 74990 | 6.47 |
| Upper Limit [a] | 361958 | 9.35 | 519784 | 10.20 | 260322 | 13.46 | 273324 | 16.02 | 149980 | 6.97 |
| Lower Limit [b] | 90490 | 8.35 | 129946 | 9.20 | 65081 | 12.46 | 68331 | 15.02 | 37495 | 5.97 |
| Lab Sample ID | 1S 1 AREA | RT | IS 2 AREA | RT | 1S 3 AREA | RT | 1S 4 AREA | RT | 1S 5 AREA | RT |
| MSK1878-BS | 176928 | 8.86 | 250113 | 9.71 | 127557 | 12.96 | 136000 | 15.52 | 66217 | 6.47 |
| MSK1878-BSD | 180146 | 8.86 | 253753 | 9.71 | 129273 | 12.96 | 137797 | 15.52 | 67501 | 6.47 |
| MSK1878-MB | 182573 | 8.86 | 267582 | 9.71 | 127813 | 12.97 | 133560 | 15.52 | 69915 | 6.47 |
| ZZZZZZ | 182673 | 8.86 | 264721 | 9.71 | 135338 | 12.96 | 139216 | 15.52 | 67912 | 6.50 |
| ZZZZZZ | 183824 | 8.86 | 265880 | 9.71 | 129314 | 12.97 | 129161 | 15.52 | 66914 | 6.48 |
| MC5314-1 | 178008 | 8.86 | 258138 | 9.71 | 132150 | 12.97 | 131440 | 15.52 | 66966 | 6.48 |
| MC5314-1MS | 173382 | 8.86 | 247692 | 9.71 | 130706 | 12.96 | 138340 | 15.52 | 67797 | 6.47 |
| MC5314-1MSD | 182005 | 8.86 | 260269 | 9.71 | 132989 | 12.96 | 140607 | 15.52 | 70862 | 6.48 |
| ZZZZZZ | 183488 | 8.86 | 271369 | 9.71 | 129833 | 12.97 | 133641 | 15.52 | 65909 | 6.47 |
| ZZZZZZ | 182724 | 8.86 | 269990 | 9.71 | 129994 | 12.97 | 130383 | 15.52 | 66688 | 6.47 |
| ZZZZZZ | 168737 | 8.86 | 242809 | 9.71 | 118747 | 12.97 | 142578 | 15.52 | 65948 | 6.47 |
| ZZZZZZ | 183399 | 8.86 | 258415 | 9.71 | 125590 | 12.97 | 149929 | 15.52 | 70897 | 6.47 |
| ZZZZZZ | 196675 | 8.86 | 286813 | 9.71 | 137626 | 12.97 | 144182 | 15.52 | 73179 | 6.47 |
| ZZZZZZ | 194264 | 8.86 | 281077 | 9.71 | 136638 | 12.97 | 136435 | 15.52 | 72937 | 6.47 |
| ZZZZZZ | 187304 | 8.86 | 273961 | 9.71 | 128037 | 12.97 | 134761 | 15.52 | 69284 | 6.47 |
| ZZZZZZ | 199861 | 8.86 | 286803 | 9.71 | 138192 | 12.97 | 143114 | 15.52 | 74993 | 6.47 |
| MC5218-5 | 192326 | 8.86 | 281205 | 9.71 | 135992 | 12.97 | 145585 | 15.52 | 72133 | 6.48 |
| ZZZZZZ | 196234 | 8.86 | 284924 | 9.71 | 135293 | 12.97 | 141050 | 15.52 | 73866 | 6.47 |
| ZZZZZZ | 195197 | 8.86 | 284328 | 9.71 | 136283 | 12.97 | 138965 | 15.52 | 72630 | 6.47 |
| ZZZZZZ | 190640 | 8.86 | 284725 | 9.71 | 139753 | 12.97 | 140302 | 15.52 | 71463 | 6.47 |
| ZZZZZZ | 184442 | 8.86 | 268760 | 9.71 | 136383 | 12.97 | 137307 | 15.52 | 68161 | 6.47 |
| ZZZZZZ | 182562 | 8.86 | 265680 | 9.71 | 133522 | 12.97 | 136453 | 15.52 | 68842 | 6.47 |
| ZZZZZZ | 180797 | 8.86 | 262976 | 9.71 | 135799 | 12.97 | 133457 | 15.52 | 65204 | 6.49 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSL1960-CC1951 | Injection Date: | 11/11/11 |
| Lab File ID: | L58205.D | Injection Time: | 14:48 |
| Instrument ID: | GCMSL | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 196038 | 8.19 | 271193 | 9.02 | 143990 | 12.25 | 158212 | 14.81 | 75185 | 5.82 |
| Upper Limit [a] | 392076 | 8.69 | 542386 | 9.52 | 287980 | 12.75 | 316424 | 15.31 | 150370 | 6.32 |
| Lower Limit [b] | 98019 | 7.69 | 135597 | 8.52 | 71995 | 11.75 | 79106 | 14.31 | 37593 | 5.32 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSL1960-BS | 197671 | 8.18 | 268786 | 9.01 | 140719 | 12.25 | 152356 | 14.81 | 67185 | 5.82 |
| MSL1960-BSD | 196913 | 8.18 | 264411 | 9.01 | 139315 | 12.25 | 156310 | 14.81 | 69083 | 5.82 |
| MSL1960-MB | 184866 | 8.18 | 251362 | 9.02 | 126271 | 12.26 | 130426 | 14.81 | 65180 | 5.83 |
| ZZZZZZ | 182970 | 8.18 | 246050 | 9.02 | 125401 | 12.26 | 130103 | 14.81 | 69109 | 5.83 |
| MC5218-7 | 181937 | 8.18 | 248675 | 9.02 | 120469 | 12.26 | 125789 | 14.82 | 66765 | 5.83 |
| MC5218-8 | 175545 | 8.19 | 242269 | 9.02 | 122200 | 12.26 | 122320 | 14.82 | 63009 | 5.84 |
| ZZZZZZ | 197226 | 8.18 | 273518 | 9.01 | 141866 | 12.25 | 177969 | 14.81 | 0[c] | 0.00* |
| ZZZZZZ | 196926 | 8.18 | 256824 | 9.02 | 124527 | 12.25 | 147933 | 14.81 | 66120 | 5.84 |
| ZZZZZZ | 191024 | 8.18 | 253152 | 9.02 | 127172 | 12.25 | 135037 | 14.81 | 65264 | 5.83 |
| ZZZZZZ | 190583 | 8.18 | 258382 | 9.02 | 125608 | 12.26 | 134463 | 14.81 | 63952 | 5.83 |
| ZZZZZZ | 191952 | 8.18 | 270179 | 9.02 | 136959 | 12.25 | 170777 | 14.81 | 67834 | 5.82 |
| ZZZZZZ | 216357 | 8.18 | 287770 | 9.01 | 145526 | 12.25 | 174074 | 14.81 | 62525 | 5.83 |
| ZZZZZZ | 260575 | 8.18 | 355656 | 9.01 | 177758 | 12.25 | 180091 | 14.81 | 90004 | 5.83 |
| ZZZZZZ | 213614 | 8.18 | 285376 | 9.01 | 138241 | 12.25 | 150358 | 14.81 | 77090 | 5.83 |
| MC5219-1 | 187120 | 8.18 | 252868 | 9.02 | 122301 | 12.25 | 127080 | 14.81 | 63565 | 5.82 |
| ZZZZZZ | 191608 | 8.18 | 258033 | 9.02 | 127874 | 12.25 | 132251 | 14.81 | 63214 | 5.83 |
| ZZZZZZ | 226558 | 8.19 | 306455 | 9.02 | 144618 | 12.26 | 167063 | 14.81 | 24963[c] | 5.95 |
| ZZZZZZ | 209271 | 8.18 | 279133 | 9.02 | 133333 | 12.25 | 137082 | 14.81 | 72869 | 5.94 |
| ZZZZZZ | 185503 | 8.18 | 256942 | 9.02 | 125402 | 12.25 | 152768 | 14.81 | 58385 | 5.84 |
| MC5219-1MS | 202351 | 8.18 | 277061 | 9.01 | 139924 | 12.25 | 157430 | 14.81 | 55034 | 5.83 |
| MC5219-1MSD | 203420 | 8.18 | 280827 | 9.01 | 145913 | 12.25 | 162665 | 14.81 | 55777 | 5.82 |

**IS 1** = Pentafluorobenzene
**IS 2** = 1,4-Difluorobenzene
**IS 3** = Chlorobenzene-D5
**IS 4** = 1,4-Dichlorobenzene-d4
**IS 5** = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Volatile Internal Standard Area Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSV140-CC126 | Injection Date: | 11/08/11 |
| Lab File ID: | V3149.D | Injection Time: | 08:53 |
| Instrument ID: | GCMSV | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 763444 | 6.51 | 1142308 | 7.70 | 703883 | 11.06 | 666868 | 13.30 | 255019 | 3.48 |
| Upper Limit [a] | 1526888 | 7.01 | 2284616 | 8.20 | 1407766 | 11.56 | 1333736 | 13.80 | 510038 | 3.98 |
| Lower Limit [b] | 381722 | 6.01 | 571154 | 7.20 | 351942 | 10.56 | 333434 | 12.80 | 127510 | 2.98 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSV140-BS | 704014 | 6.51 | 1056119 | 7.70 | 637827 | 11.06 | 604503 | 13.30 | 232102 | 3.48 |
| MSV140-MB | 703086 | 6.50 | 1060462 | 7.70 | 656812 | 11.06 | 637533 | 13.30 | 352871 | 3.47 |
| ZZZZZZ | 699535 | 6.50 | 1064487 | 7.70 | 646943 | 11.06 | 615431 | 13.30 | 194544 | 3.46 |
| ZZZZZZ | 693083 | 6.51 | 1030998 | 7.70 | 617947 | 11.06 | 550037 | 13.30 | 204103 | 3.49 |
| ZZZZZZ | 688849 | 6.51 | 1033678 | 7.70 | 633678 | 11.06 | 598146 | 13.30 | 316615 | 3.48 |
| ZZZZZZ | 604482 | 6.51 | 902365 | 7.71 | 543936 | 11.06 | 445290 | 13.30 | 155886 | 3.50 |
| ZZZZZZ | 688410 | 6.51 | 1040650 | 7.71 | 610813 | 11.06 | 527732 | 13.30 | 170661 | 3.48 |
| MC5218-4 | 706073 | 6.51 | 1081085 | 7.70 | 670255 | 11.06 | 637782 | 13.30 | 303607 | 3.47 |
| MC5218-4MS | 711479 | 6.52 | 1059104 | 7.71 | 659482 | 11.06 | 624895 | 13.30 | 356108 | 3.48 |
| MC5218-4MSD | 722619 | 6.51 | 1074227 | 7.71 | 666079 | 11.06 | 636231 | 13.30 | 345325 | 3.48 |
| MC5218-1 | 737128 | 6.51 | 1113425 | 7.70 | 690099 | 11.06 | 663076 | 13.30 | 312503 | 3.47 |
| MC5218-2 | 738880 | 6.51 | 1120635 | 7.70 | 693230 | 11.06 | 661952 | 13.30 | 339357 | 3.48 |
| MC5218-3 | 725691 | 6.52 | 1101420 | 7.71 | 677633 | 11.06 | 643419 | 13.30 | 345511 | 3.48 |
| MC5218-6 | 716333 | 6.52 | 1093116 | 7.71 | 709631 | 11.06 | 485304 | 13.30 | 344621 | 3.49 |
| ZZZZZZ | 758783 | 6.51 | 1143021 | 7.70 | 701836 | 11.06 | 685822 | 13.30 | 448626 | 3.48 |
| ZZZZZZ | 641745 | 6.51 | 948953 | 7.70 | 545581 | 11.06 | 452969 | 13.30 | 405165 | 3.48 |
| ZZZZZZ | 684247 | 6.51 | 1069605 | 7.70 | 632294 | 11.06 | 531531 | 13.30 | 406254 | 3.47 |
| ZZZZZZ | 703885 | 6.52 | 1063726 | 7.71 | 654391 | 11.06 | 625422 | 13.30 | 322423 | 3.48 |
| ZZZZZZ | 576773 | 6.51 | 869653 | 7.70 | 480008 | 11.06 | 348325 | 13.30 | 216223 | 3.48 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Surrogate Recovery Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC5218-7 | L58211.D | 91.0 | 88.0 | 82.0 |
| MC5218-8 | L58212.D | 90.0 | 89.0 | 84.0 |
| MC5219-1MS | L58227.D | 79.0 | 84.0 | 82.0 |
| MC5219-1MSD | L58228.D | 83.0 | 84.0 | 82.0 |
| MSL1960-BS | L58206.D | 84.0 | 89.0 | 86.0 |
| MSL1960-BSD | L58207.D | 85.0 | 89.0 | 84.0 |
| MSL1960-MB | L58209.D | 89.0 | 88.0 | 84.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC5218-1 | V3162.D | 101.0 | 102.0 | 89.0 |
| MC5218-2 | V3163.D | 101.0 | 103.0 | 89.0 |
| MC5218-3 | V3164.D | 103.0 | 102.0 | 89.0 |
| MC5218-4 | V3159.D | 102.0 | 102.0 | 89.0 |
| MC5218-5 | K56070.D | 120.0 | 113.0 | 123.0 |
| MC5218-6 | V3165.D | 101.0 | 101.0 | 107.0 |
| MC5218-4MS | V3160.D | 108.0 | 105.0 | 91.0 |
| MC5218-4MSD | V3161.D | 108.0 | 106.0 | 91.0 |
| MC5314-1MS | K56058.D | 122.0 | 117.0 | 115.0 |
| MC5314-1MSD | K56059.D | 117.0 | 111.0 | 113.0 |
| MSK1878-BS | K56052.D | 121.0 | 115.0 | 117.0 |
| MSK1878-BSD | K56053.D | 121.0 | 113.0 | 115.0 |
| MSK1878-MB | K56054.D | 128.0 | 115.0 | 128.0 |
| MSV140-BS | V3150.D | 111.0 | 106.0 | 94.0 |
| MSV140-MB | V3151.D | 106.0 | 104.0 | 88.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

New England ACCUTEST LABORATORIES

## GC Volatiles



## QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Bateh | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1374-MB | BH24979.D | 1 | 11/07/11 | WS | n/a | n/a | GBH1374 |

The QC reported here applies to the following samples: Method: SW846 8015

MC5218-1, MC5218-2, MC5218-3, MC5218-4, MC5218-5, MC5218-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 5.0 | 0.95 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 81% | 36-148% |

# Method Blank Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1380-MB | BH25099.D | 1 | 11/13/11 | WS | n/a | n/a | GBH1380 |

The QC reported here applies to the following samples: Method: SW846 8015

MC5218-7

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | 0.10 | 0.070 | mg/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 88% | 60-126% |

# Blank Spike Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1374-BSP | BH24980.D | 1 | 11/07/11 | WS | n/a | n/a | GBH1374 |

The QC reported here applies to the following samples: Method: SW846 8015

MC5218-1, MC5218-2, MC5218-3, MC5218-4, MC5218-5, MC5218-6

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 10 | 8.51 | 85 | 67-133 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 81% | 36-148% |

# Blank Spike Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| GBH1380-BSP | BH25100.D | 1 | 11/13/11 | WS | n/a | n/a | GBH1380 |

The QC reported here applies to the following samples: Method: SW846 8015

MC5218-7

| CAS No. | Compound | Spike mg/l | BSP mg/l | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 0.4 | 0.365 | 91 | 68-134 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 94% | 60-126% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC5218-4MS | BH24987.D | 1 | 11/07/11 | WS | n/a | n/a | GBH1374 |
| MC5218-4MSD | BH24988.D | 1 | 11/07/11 | WS | n/a | n/a | GBH1374 |
| MC5218-4 | BH24986.D | 1 | 11/07/11 | WS | n/a | n/a | GBH1374 |

The QC reported here applies to the following samples: Method: SW846 8015

MC5218-1, MC5218-2, MC5218-3, MC5218-4, MC5218-5, MC5218-6

| CAS No. | Compound | MC5218-4 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | ND | | 67.3 | 62.5 | 93 | 62.2 | 92 | 0 | 40-154/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC5218-4 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 83% | 82% | 84% | 36-148% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC5171-1MS | BH25I02.D | 2 | 11/13/11 | WS | n/a | n/a | GBH1380 |
| MC5171-1MSD | BH25103.D | 2 | 11/13/11 | WS | n/a | n/a | GBH1380 |
| MC5171-1 | BH25101.D | 2 | 11/13/11 | WS | n/a | n/a | GBH1380 |



The QC reported here applies to the following samples: Method: SW846 8015

MC5218-7

| CAS No. | Compound | MC5171-1 mg/l | Q | Spike mg/l | MS mg/l | MS % | MSD mg/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH-GRO (VOA) | 1.96 | | 0.8 | 2.80 | 105 | 2.60 | 80 | 7 | 72-131/20 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC5171-1 | Limits |
|---|---|---|---|---|---|
| 615-59-8 | 2,5-Dibromotoluene | 128%* [a] | 124% | 127%* [a] | 60-126% |

(a) Outside control limits due to possible matrix interference.

# Volatile Surrogate Recovery Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8015 Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC5218-7 | BH25107.D | 96.0 |
| GBH1380-BSP | BH25100.D | 94.0 |
| GBH1380-MB | BH25099.D | 88.0 |
| MC5171-1MS | BH25102.D | 128.0* [b] |
| MC5171-1MSD | BH25103.D | 124.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 60-126% |

(a) Recovery from GC signal #1
(b) Outside control limits due to possible matrix interference.

# Volatile Surrogate Recovery Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846 8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC5218-1 | BH24983.D | 88.0 |
| MC5218-2 | BH24984.D | 87.0 |
| MC5218-3 | BH24985.D | 85.0 |
| MC5218-4 | BH24986.D | 84.0 |
| MC5218-5 | BH24990.D | 110.0 |
| MC5218-6 | BH24991.D | 114.0 |
| GBH1374-BSP | BH24980.D | 81.0 |
| GBH1374-MB | BH24979.D | 81.0 |
| MC5218-4MS | BH24987.D | 83.0 |
| MC5218-4MSD | BH24988.D | 82.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2,5-Dibromotoluene | 36-148% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1374-CC1043 | Injection Date: | 11/07/11 |
| Lab File ID: | BH24978.D | Injection Time: | 09:40 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1374-MB | BH24979.D | 11/07/11 | 10:36 | 32.40 |
| GBH1374-BSP | BH24980.D | 11/07/11 | 11:17 | 32.40 |
| ZZZZZZ | BH24981.D | 11/07/11 | 11:57 | 32.40 |
| ZZZZZZ | BH24982.D | 11/07/11 | 12:37 | 32.40 |
| MC5218-1 | BH24983.D | 11/07/11 | 13:18 | 32.40 |
| MC5218-2 | BH24984.D | 11/07/11 | 13:58 | 32.40 |
| MC5218-3 | BH24985.D | 11/07/11 | 14:39 | 32.40 |
| MC5218-4 | BH24986.D | 11/07/11 | 15:19 | 32.40 |
| MC5218-4MS | BH24987.D | 11/07/11 | 16:00 | 32.40 |
| MC5218-4MSD | BH24988.D | 11/07/11 | 16:40 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1374-CC1043 | Injection Date: | 11/07/11 |
| Lab File ID: | BH24989.D | Injection Time: | 17:21 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| MC5218-5 | BH24990.D | 11/07/11 | 18:01 | 32.40 |
| MC5218-6 | BH24991.D | 11/07/11 | 18:42 | 32.40 |
| ZZZZZZ | BH24992.D | 11/07/11 | 19:22 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBH1380-ICC1380 | Injection Date: | 11/13/11 |
| Lab File ID: | BH25094.D | Injection Time: | 08:32 |
| Instrument ID: | GCBH | Method: | SW846 8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 32.40 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| GBH1380-MB | BH25099.D | 11/13/11 | 12:02 | 32.40 |
| GBH1380-BSP | BH25100.D | 11/13/11 | 12:43 | 32.40 |
| MC5171-1 | BH25101.D | 11/13/11 | 13:24 | 32.40 |
| MC5171-1MS | BH25102.D | 11/13/11 | 14:04 | 32.40 |
| MC5171-1MSD | BH25103.D | 11/13/11 | 14:45 | 32.40 |
| ZZZZZZ | BH25104.D | 11/13/11 | 15:25 | 32.40 |
| ZZZZZZ | BH25105.D | 11/13/11 | 16:06 | 32.40 |
| ZZZZZZ | BH25106.D | 11/13/11 | 16:46 | 32.40 |
| MC5218-7 | BH25107.D | 11/13/11 | 17:26 | 32.40 |

Surrogate Compounds

S1 = 2,5-Dibromotoluene

(a) Retention time from GC signal #1

New England ACCUTEST LABORATORIES

## GC Semi-volatiles

## QC Data Summaries



Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Surrogate Recovery Summaries
- GC Surrogate Retention Time Summaries

# Method Blank Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26911-MB | BG32107.D | 1 | 11/10/11 | KD | 11/08/11 | OP26911 | GBG1162 |

The QC reported here applies to the following samples: Method: SW846-8015

MC5218-7



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 0.20 | 0.024 | mg/l | |
| | TPH (> C28-C40) | ND | 0.20 | 0.024 | mg/l | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 84-15-1 | o-Terphenyl | 92% | 40-140% |

# Method Blank Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26896-MB | BG32131A.D | 1 | 11/11/11 | KD | 11/10/11 | OP26896 | GBG1165 |

The QC reported here applies to the following samples: Method: SW846-8015

MC5218-1, MC5218-2, MC5218-3, MC5218-4, MC5218-5, MC5218-6

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | 17 | 13 | mg/kg | |
| | TPH (> C28-C40) | ND | 17 | 13 | mg/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 84-15-1 | o-Terphenyl | 74% | 40-140% |

# Blank Spike Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26911-BS | BG32108.D | 1 | 11/11/11 | KD | 11/08/11 | OP26911 | GBG1162 |

The QC reported here applies to the following samples: Method: SW846-8015

MC5218-7

| CAS No. | Compound | Spike mg/l | BSP mg/l | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 2.5 | 2.51 | 100 | 46-120 |
| | TPH (> C28-C40) | 2.5 | 2.08 | 83 | 46-120 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 84-15-1 | o-Terphenyl | 96% | 40-140% |

7.2.1

7

# Blank Spike Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26896-BS | BG32132A.D | 1 | 11/11/11 | KD | 11/10/11 | OP26896 | GBG1165 |

The QC reported here applies to the following samples: Method: SW846-8015

MC5218-1, MC5218-2, MC5218-3, MC5218-4, MC5218-5, MC5218-6

| CAS No. | Compound | Spike mg/kg | BSP mg/kg | BSP % | Limits |
|---|---|---|---|---|---|
| | TPH (C10-C28) | 166 | 128 | 77 | 63-139 |
| | TPH (> C28-C40) | 166 | 104 | 63 | 46-103 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 84-15-1 | o-Terphenyl | 74% | 40-140% |

7.2.2

7

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26911-MS | BG32109.D | 1 | 11/11/11 | KD | 11/08/11 | OP26911 | GBG1162 |
| OP26911-MSD | BG32110.D | 1 | 11/11/11 | KD | 11/08/11 | OP26911 | GBG1162 |
| MC5282-9 | BG32111.D | 1 | 11/11/11 | KD | 11/08/11 | OP26911 | GBG1162 |

The QC reported here applies to the following samples: Method: SW846-8015

MC5218-7

7.3.1

7

| CAS No. | Compound | MC5282-9 mg/l | Q | Spike mg/l | MS mg/l | MS % | MSD mg/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 2.5 | 2.63 | 105 | 2.47 | 99 | 6 | 45-120/25 |
| | TPH (>C28-C40) | 0.0324 | | 2.5 | 2.08 | 82 | 1.97 | 78 | 5 | 45-120/25 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC5282-9 | Limits |
|---|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 96% | 92% | 96% | 40-140% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP26896-MS | BG32133A.D | 1 | 11/11/11 | KD | 11/10/11 | OP26896 | GBG1165 |
| OP26896-MSD | BG32135A.D | 1 | 11/11/11 | KD | 11/10/11 | OP26896 | GBG1165 |
| MC5218-4 | BG32137.D | 1 | 11/12/11 | KD | 11/10/11 | OP26896 | GBG1165 |

The QC reportcd here applies to the following samples: Method: SW846-8015

MC5218-1, MC5218-2, MC5218-3, MC5218-4, MC5218-5, MC5218-6

| CAS No. | Compound | MC5218-4 mg/kg | Q | Spike mg/kg | MS mg/kg | MS % | MSD mg/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| | TPH (C10-C28) | ND | | 166 | 140 | 85 | 128 | 77 | 9 | 8-154/127 |
| | TPH (>C28-C40) | ND | | 166 | 109 | 66 | 99.0 | 60 | 10 | -39-170/41 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC5218-4 | Limits |
|---|---|---|---|---|---|
| 84-15-1 | o-Terphenyl | 76% | 70% | 74% | 40-140% |

7.3.2

7

# Semivolatile Surrogate Recovery Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC5218-7 | BG32113.D | 43.0 |
| OP26911-BS | BG32108.D | 96.0 |
| OP26911-MB | BG32107.D | 92.0 |
| OP26911-MS | BG32109.D | 96.0 |
| OP26911-MSD | BG32110.D | 92.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = o-Terphenyl | 40-140% |

(a) Recovery from GC signal #1

# Semivolatile Surrogate Recovery Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Method: SW846-8015 Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 [a] |
|---|---|---|
| MC5218-1 | BG32136.D | 64.0 |
| MC5218-2 | BG32138.D | 68.0 |
| MC5218-3 | BG32142.D | 70.0 |
| MC5218-4 | BG32137.D | 74.0 |
| MC5218-5 | BG32139.D | 88.0 |
| MC5218-6 | BG32140.D | 88.0 |
| OP26896-BS | BG32132A.D | 74.0 |
| OP26896-MB | BG32131A.D | 74.0 |
| OP26896-MS | BG32133A.D | 76.0 |
| OP26896-MSD | BG32135A.D | 70.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = o-Terphenyl | 40-140% |

(a) Recovery from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1163-ICC1163 | Injection Date: | 11/10/11 |
| Lab File ID: | BG32104A.D | Injection Time: | 21:08 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 13.94 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26864-MB | BG32107A.D | 11/10/11 | 23:27 | 13.94 |
| OP26911-MB | BG32107.D | 11/10/11 | 23:27 | 13.94 |
| OP26864-BS | BG32108A.D | 11/11/11 | 00:14 | 13.94 |
| OP26911-BS | BG32108.D | 11/11/11 | 00:14 | 13.94 |
| OP26864-MS | BG32109A.D | 11/11/11 | 01:00 | 13.94 |
| OP26911-MS | BG32109.D | 11/11/11 | 01:00 | 13.94 |
| OP26864-MSD | BG32110A.D | 11/11/11 | 01:47 | 13.94 |
| OP26911-MSD | BG32110.D | 11/11/11 | 01:47 | 13.94 |
| MC5278-2 | BG32111A.D | 11/11/11 | 02:33 | 13.94 |
| MC5282-9 | BG32111.D | 11/11/11 | 02:33 | 13.94 |
| MC5218-7 | BG32113.D | 11/11/11 | 04:06 | 13.93 |

Surrogate Compounds

S1 = o-Terphenyl

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1164-CC1163 | Injection Date: | 11/11/11 |
| Lab File ID: | BG32123.D | Injection Time: | 13:47 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 13.94 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26893-MB | BG32124.D | 11/11/11 | 14:48 | 13.95 |
| OP26893-BS | BG32125.D | 11/11/11 | 15:34 | 13.94 |
| OP26893-MS | BG32126.D | 11/11/11 | 16:20 | 13.94 |
| OP26893-MSD | BG32127.D | 11/11/11 | 17:06 | 13.94 |
| MC5282-1 | BG32128.D | 11/11/11 | 17:53 | 13.93 |
| ZZZZZZ | BG32129.D | 11/11/11 | 18:39 | 13.93 |
| ZZZZZZ | BG32130.D | 11/11/11 | 19:25 | 13.93 |
| OP26910-MB | BG32131.D | 11/11/11 | 20:11 | 13.93 |
| OP26896-MB | BG32131A.D | 11/11/11 | 20:11 | 13.93 |
| OP26910-BS | BG32132.D | 11/11/11 | 20:57 | 13.93 |
| OP26896-BS | BG32132A.D | 11/11/11 | 20:57 | 13.93 |
| OP26910-MS | BG32133.D | 11/11/11 | 21:44 | 13.93 |
| OP26896-MS | BG32133A.D | 11/11/11 | 21:44 | 13.93 |

Surrogate Compounds

S1 = o-Terphenyl

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1165-CC1162 | Injection Date: | 11/11/11 |
| Lab File ID: | BG32123A.D | Injection Time: | 13:47 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 13.94 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26893-MB | BG32124.D | 11/11/11 | 14:48 | 13.95 |
| OP26893-BS | BG32125.D | 11/11/11 | 15:34 | 13.94 |
| OP26893-MS | BG32126.D | 11/11/11 | 16:20 | 13.94 |
| OP26893-MSD | BG32127.D | 11/11/11 | 17:06 | 13.94 |
| MC5282-I | BG32128.D | 11/11/11 | 17:53 | 13.93 |
| ZZZZZZ | BG32129.D | 11/11/11 | 18:39 | 13.93 |
| ZZZZZZ | BG32130.D | 11/11/11 | 19:25 | 13.93 |
| OP26910-MB | BG32131.D | 11/11/11 | 20:11 | 13.93 |
| OP26896-MB | BG32131A.D | 11/11/11 | 20:11 | 13.93 |
| OP26910-BS | BG32132.D | 11/11/11 | 20:57 | 13.93 |
| OP26896-BS | BG32132A.D | 11/11/11 | 20:57 | 13.93 |
| OP26910-MS | BG32133.D | 11/11/11 | 21:44 | 13.93 |
| OP26896-MS | BG32133A.D | 11/11/11 | 21:44 | 13.93 |

Surrogate Compounds

S1 = o-Terphenyl

(a) Retention time from GC signal #1

# GC Surrogate Retention Time Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1164-CC1163 | Injection Date: | 11/11/11 |
| Lab File ID: | BG32134.D | Injection Time: | 22:30 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 13.93 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26910-MSD | BG32135.D | 11/11/11 | 23:16 | 13.93 |
| OP26896-MSD | BG32135A.D | 11/11/11 | 23:16 | 13.93 |
| MC5218-1 | BG32136.D | 11/12/11 | 00:02 | 13.92 |
| MC5282-8 | BG32137A.D | 11/12/11 | 00:48 | 13.93 |
| MC5218-4 | BG32137.D | 11/12/11 | 00:48 | 13.93 |
| MC5218-2 | BG32138.D | 11/12/11 | 01:35 | 13.93 |
| MC5218-5 | BG32139.D | 11/12/11 | 02:21 | 13.94 |
| MC5218-6 | BG32140.D | 11/12/11 | 03:07 | 13.94 |
| ZZZZZZ | BG32141.D | 11/12/11 | 03:53 | 13.93 |
| MC5218-3 | BG32142.D | 11/12/11 | 04:39 | 13.93 |
| ZZZZZZ | BG32143.D | 11/12/11 | 05:26 | 13.92 |
| ZZZZZZ | BG32144.D | 11/12/11 | 06:12 | 13.94 |

Surrogate Compounds

S1 = o-Terphenyl

(a) Retention time from GC signal #1

7.5.4

7

# GC Surrogate Retention Time Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | GBG1165-CC1162 | Injection Date: | 11/11/11 |
| Lab File ID: | BG32134A.D | Injection Time: | 22:30 |
| Instrument ID: | GCBG | Method: | SW846-8015 |

| | S1 [a] RT |
|---|---|
| Check Std | 13.93 |

| Lab Sample ID | Lab File ID | Date Analyzed | Time Analyzed | S1 [a] RT |
|---|---|---|---|---|
| OP26910-MSD | BG32135.D | 11/11/11 | 23:16 | 13.93 |
| OP26896-MSD | BG32135A.D | 11/11/11 | 23:16 | 13.93 |
| MC5218-1 | BG32136.D | 11/12/11 | 00:02 | 13.92 |
| MC5282-8 | BG32137A.D | 11/12/11 | 00:48 | 13.93 |
| MC5218-4 | BG32137.D | 11/12/11 | 00:48 | 13.93 |
| MC5218-2 | BG32138.D | 11/12/11 | 01:35 | 13.93 |
| MC5218-5 | BG32139.D | 11/12/11 | 02:21 | 13.94 |
| MC5218-6 | BG32140.D | 11/12/11 | 03:07 | 13.94 |
| ZZZZZZ | BG32141.D | 11/12/11 | 03:53 | 13.93 |
| MC5218-3 | BG32142.D | 11/12/11 | 04:39 | 13.93 |
| ZZZZZZ | BG32143.D | 11/12/11 | 05:26 | 13.92 |
| ZZZZZZ | BG32144.D | 11/12/11 | 06:12 | 13.94 |

Surrogate Compounds

S1 = o-Terphenyl

(a) Retention time from GC signal #1

7.5.5

7

New England ACCUTEST LABORATORIES

## General Chemistry

# QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC5218
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE Install 2011/ 21562593.00014 170 East Rand Ave. Hartford, IL

Sample: MC5218-1 Analyzed: 07-NOV-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP-44 (20-21)110111

| | | |
|---|---|---|
| Wet Weight (Total) | 32.897 | g |
| Tare Weight | 25.831 | g |
| Dry Weight (Total) | 32.375 | g |
| Solids, Percent | 92.6 | % |

Sample: MC5218-2 Analyzed: 07-NOV-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP-44 (30-31)110111

| | | |
|---|---|---|
| Wet Weight (Total) | 27.254 | g |
| Tare Weight | 20.51 | g |
| Dry Weight (Total) | 25.864 | g |
| Solids, Percent | 79.4 | % |

Sample: MC5218-3 Analyzed: 07-NOV-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP-45 (10-11)110111

| | | |
|---|---|---|
| Wet Weight (Total) | 27.554 | g |
| Tare Weight | 18.33 | g |
| Dry Weight (Total) | 27.268 | g |
| Solids, Percent | 96.9 | % |

Sample: MC5218-4 Analyzed: 07-NOV-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP-45 (20-21)110111

| | | |
|---|---|---|
| Wet Weight (Total) | 24.293 | g |
| Tare Weight | 18.404 | g |
| Dry Weight (Total) | 24.023 | g |
| Solids, Percent | 95.4 | % |

Sample: MC5218-5 Analyzed: 07-NOV-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP-45 (30-31)110111

| | | |
|---|---|---|
| Wet Weight (Total) | 29.026 | g |
| Tare Weight | 20.706 | g |
| Dry Weight (Total) | 28.431 | g |
| Solids, Percent | 92.8 | % |

Sample: MC5218-6 Analyzed: 07-NOV-11 by HS Method: SM21 2540 B MOD.
ClientID: VMP-45 (30-31)110111-DUP

| | | |
|---|---|---|
| Wet Weight (Total) | 28.587 | g |
| Tare Weight | 21.22 | g |
| Dry Weight (Total) | 28.031 | g |
| Solids, Percent | 92.5 | % |

8.1
8

SEE LAST PAGE OF TABLE FOR NOTES

Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | 1,1,1,2-Tetrachloroethane | | | 1,1,1-Trichloroethane (Methyl chloroform) | | | 1,1,2,2-Tetrachloroethane | | | 1,1,2-Trichloroethane | | | 1,1-Dichloroethane | | | 1,1-Dichloroethene | | | 1,1-Dichloropropene | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | < 0.0066 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0066 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | < 0.0049 | U | | < 0.002 | U | | < 0.002 | U | | < 0.002 | U | | < 0.002 | U | | < 0.002 | U | | < 0.0049 | U | |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | < 0.006 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.006 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | < 0.0061 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0061 | U | |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | < 0.007 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.007 | U | |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | < 0.006 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.006 | U | |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | < 0.007 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.007 | U | |

SEE LAST PAGE OF TABLE FOR NOTES

Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | 1,2,3-Trichlorobenzene | | | 1,2,3-Trichloropropane | | | 1,2,4-Trichlorobenzene | | | 1,2,4-Trimethylbenzene | | | 1,2-Dibromo-3-chloropropane (DBCP) | | | 1,2-Dibromoethane | | | 1,2-Dichlorobenzene | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0026 | U | | < 0.0026 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | < 0.0049 | U | | < 0.0049 | U | | < 0.0049 | U | | < 0.0049 | U | | < 0.0049 | U | | < 0.002 | U | | < 0.002 | U | |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | < 0.006 | U | | < 0.006 | U | | < 0.006 | U | | < 0.006 | U | | < 0.006 | U | | < 0.0024 | U | | < 0.0024 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | 0.0016 | J | | < 0.0061 | U | | < 0.0025 | U | | < 0.0025 | U | |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | | < 0.0028 | U | | < 0.0028 | U | |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | < 0.006 | U | | < 0.006 | U | | < 0.006 | U | | 0.003 | J | J | < 0.006 | U | | < 0.0024 | U | | < 0.0024 | U | |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | | < 0.0028 | U | | < 0.0028 | U | |

SEE LAST PAGE OF TABLE FOR NOTES

Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | 1,2-Dichloroethane | | | 1,2-Dichloropropane | | | 1,3,5-Trimethylbenzene | | | 1,3-Dichlorobenzene | | | 1,3-Dichloropropane | | | 1,4-Dichlorobenzene | | | 1,4-Dioxane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.027 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.029 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | < 0.0026 | U | | < 0.0026 | U | | < 0.0066 | U | | < 0.0026 | U | | < 0.0066 | U | | < 0.0026 | U | | < 0.033 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | < 0.002 | U | | < 0.002 | U | | < 0.0049 | U | | < 0.002 | U | | < 0.0049 | U | | < 0.002 | U | | < 0.024 | U | |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | < 0.0024 | U | | < 0.0024 | U | | < 0.006 | U | | < 0.0024 | U | | < 0.006 | U | | < 0.0024 | U | | < 0.03 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.028 | U | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | < 0.0025 | U | | < 0.0025 | U | | < 0.0061 | U | | < 0.0025 | U | | < 0.0061 | U | | < 0.0025 | U | | < 0.031 | U | |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | < 0.0028 | U | | < 0.0028 | U | | < 0.007 | U | | < 0.0028 | U | | < 0.007 | U | | < 0.0028 | U | | < 0.035 | U | |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | < 0.0024 | U | | < 0.0024 | U | | 0.0016 | J | J | < 0.0024 | U | | < 0.006 | U | | < 0.0024 | U | | < 0.03 | U | |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | < 0.0028 | U | | < 0.0028 | U | | < 0.007 | U | | < 0.0028 | U | | < 0.007 | U | | < 0.0028 | U | | < 0.035 | U | |

Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | 2,2-Dichloropropane | | | 2-Butanone | | | 2-Chloroethyl vinyl ether | | | 2-Chlorotoluene | | | 2-Hexanone (Methyl N-Butyl Ketone) | | | 4-Chlorotoluene | | | 4-Methyl-2-pentanone (Methyl Isobutyl Ketone) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | < 0.0049 | U | | < 0.0049 | U | UJ | < 0.0049 | U | | < 0.0049 | U | | < 0.0049 | U | | < 0.0049 | U | | < 0.0049 | U | |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | < 0.006 | U | | < 0.006 | U | | < 0.006 | U | | < 0.006 | U | | < 0.006 | U | | < 0.006 | U | | < 0.006 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | < 0.0061 | U | | < 0.0061 | U | UJ | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | < 0.007 | U | | < 0.007 | U | UJ | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | < 0.006 | U | | < 0.006 | U | UJ | < 0.006 | U | | < 0.006 | U | | < 0.006 | U | | < 0.006 | U | | < 0.006 | U | |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | < 0.007 | U | | < 0.007 | U | UJ | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | |

SEE LAST PAGE OF TABLE FOR NOTES

Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | Acetone | | | Acrolein | | | Acrylonitrile | | | Benzene | | | Bromobenzene | | | Bromochloromethane | | | Bromodichloromethane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | < 0.0055 | U | | < 0.027 | U | | < 0.0055 | U | | 0.0036 | | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | < 0.0331 | | U | < 0.029 | U | | < 0.0058 | U | | 0.0014 | | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | < 0.0066 | U | | < 0.033 | U | | < 0.0066 | U | | < 0.00066 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0026 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | < 0.0049 | U | | < 0.024 | U | | < 0.0049 | U | UJ | 0.0044 | | | < 0.0049 | U | | < 0.0049 | U | | < 0.002 | U | |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | < 0.006 | U | | < 0.03 | U | | < 0.006 | U | | 0.0179 | | J | < 0.006 | U | | < 0.006 | U | | < 0.0024 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | < 0.0138 | | U | < 0.028 | U | | < 0.0057 | U | | 0.00071 | | J | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | < 0.0208 | | U | < 0.031 | U | | < 0.0061 | U | UJ | 0.0028 | | | < 0.0061 | U | | < 0.0061 | U | | < 0.0025 | U | |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | < 0.007 | U | | < 0.035 | U | | < 0.007 | U | UJ | < 0.0007 | U | | < 0.007 | U | | < 0.007 | U | | < 0.0028 | U | |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | < 0.006 | U | | < 0.03 | U | | < 0.006 | U | UJ | 0.0178 | | J | < 0.006 | U | | < 0.006 | U | | < 0.0024 | U | |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | < 0.007 | U | | < 0.035 | U | | < 0.007 | U | UJ | 0.0018 | | | < 0.007 | U | | < 0.007 | U | | < 0.0028 | U | |

SEE LAST PAGE OF TABLE FOR NOTES

Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | Bromoform | | | Bromomethane | | | Carbon disulfide | | | Carbon tetrachloride | | | Chlorobenzene | | | Chlorodibromomethane | | | Chloroethane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | < 0.0026 | U | | < 0.0026 | U | | < 0.0066 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0066 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | < 0.002 | U | | < 0.002 | U | UJ | < 0.0049 | U | | < 0.002 | U | | < 0.002 | U | | < 0.002 | U | | < 0.0049 | U | |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | < 0.0024 | U | | < 0.0024 | U | | 0.0019 | J | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.006 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | < 0.0023 | U | | < 0.0023 | U | | 0.0033 | J | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | < 0.0025 | U | | < 0.0025 | U | UJ | 0.0042 | J | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0061 | U | |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | < 0.0028 | U | | < 0.0028 | U | UJ | < 0.007 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.007 | U | |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | < 0.0024 | U | | < 0.0024 | U | UJ | 0.0074 | | J | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.006 | U | |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | < 0.0028 | U | | < 0.0028 | U | UJ | < 0.007 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.007 | U | |

SEE LAST PAGE OF TABLE FOR NOTES

Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | Chloroform | | | Chloromethane | | | cis-1,2-Dichloroethene | | | cis-1,3-Dichloropropene | | | Cymene (p-Isopropyltoluene) | | | Dibromomethane | | | Dichlorodifluoromethane | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | < 0.0023 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | < 0.0026 | U | | < 0.0066 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0026 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | < 0.002 | U | | < 0.0049 | U | UJ | < 0.002 | U | | < 0.002 | U | | < 0.0049 | U | | < 0.0049 | U | | < 0.002 | U | |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | < 0.0024 | U | | < 0.006 | U | UJ | < 0.0024 | U | | < 0.0024 | U | | < 0.006 | U | | < 0.006 | U | | < 0.0024 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | < 0.0023 | U | | < 0.0057 | U | UJ | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | < 0.0025 | U | | < 0.0061 | U | UJ | < 0.0025 | U | | < 0.0025 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0025 | U | |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | < 0.0028 | U | | < 0.007 | U | UJ | < 0.0028 | U | | < 0.0028 | U | | < 0.007 | U | | < 0.007 | U | | < 0.0028 | U | |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | < 0.0024 | U | | < 0.006 | U | UJ | < 0.0024 | U | | < 0.0024 | U | | < 0.006 | U | | < 0.006 | U | | < 0.0024 | U | |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | < 0.0028 | U | | < 0.007 | U | UJ | < 0.0028 | U | | < 0.0028 | U | | < 0.007 | U | | < 0.007 | U | | < 0.0028 | U | |

SEE LAST PAGE OF TABLE FOR NOTES

Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | Dichloromethane (Methylene chloride) | | | Ethyl methacrylate | | | Ethylbenzene | | | Hexachlorobutadiene | | | Isopropylbenzene (Cumene) | | | m,p-Xylene | | | Methyl tert-Butyl Ether (MTBE) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | < 0.0023 | U | | < 0.0058 | U | | 0.00035 | J | | < 0.0058 | U | | < 0.0058 | U | | 0.00068 | J | | < 0.0023 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | < 0.0026 | U | | < 0.0066 | U | | < 0.0026 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0026 | U | | < 0.0026 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | < 0.002 | U | UJ | < 0.0049 | U | | < 0.002 | U | | < 0.0049 | U | | 0.0013 | J | | 0.0012 | J | | < 0.002 | U | |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | < 0.0024 | U | | < 0.006 | U | | 0.0018 | J | | < 0.006 | U | | 0.0119 | | | 0.0057 | | | < 0.0024 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | < 0.0025 | U | UJ | < 0.0061 | U | | 0.0048 | | | < 0.0061 | U | | < 0.0061 | U | | 0.0026 | | | < 0.0025 | U | |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | < 0.0028 | U | UJ | < 0.007 | U | | < 0.0028 | U | | < 0.007 | U | | < 0.007 | U | | < 0.0028 | U | | < 0.0028 | U | |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | < 0.0024 | U | UJ | < 0.006 | U | | 0.0097 | | J | < 0.006 | U | | < 0.006 | U | | 0.0072 | | J | < 0.0024 | U | |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | < 0.0028 | U | UJ | < 0.007 | U | | 0.0034 | | | < 0.007 | U | | < 0.007 | U | | < 0.0028 | U | | < 0.0028 | U | |

SEE LAST PAGE OF TABLE FOR NOTES

Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | Naphthalene | | | n-Butylbenzene | | | n-Propylbenzene | | | o-Xylenes | | | sec-Butylbenzene | | | Styrene | | | tert-Butylbenzene | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0055 | U | | < 0.0055 | U | | < 0.0055 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0023 | U | | < 0.0058 | U | | < 0.0058 | U | | < 0.0058 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0026 | U | | < 0.0066 | U | | < 0.0066 | U | | < 0.0066 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | < 0.0049 | U | | < 0.0049 | U | | < 0.0049 | U | | < 0.002 | U | | < 0.0049 | U | | < 0.0049 | U | | < 0.0049 | U | |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | < 0.006 | U | | 0.0136 | | | 0.0182 | | | 0.00056 | J | | 0.0056 | J | | < 0.006 | U | | < 0.006 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | | | | < 0.0057 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0057 | U | | < 0.0057 | U | | < 0.0057 | U | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | < 0.0061 | U | | < 0.0061 | U | | 0.003 | J | | < 0.0025 | U | | < 0.0061 | U | | < 0.0061 | U | | < 0.0061 | U | |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | | < 0.0028 | U | | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | < 0.006 | U | | 0.0103 | | J | 0.0016 | J | J | 0.00099 | J | J | 0.0015 | J | J | < 0.006 | U | | < 0.006 | U | |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | | < 0.0028 | U | | < 0.007 | U | | < 0.007 | U | | < 0.007 | U | |

Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | Tetrachloroethene | | | Toluene | | | trans-1,2-Dichloroethene | | | trans-1,3-Dichloropropene | | | Trichloroethene | | | Trichlorofluoromethane | | | Vinyl acetate | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | < 0.0022 | U | | < 0.0055 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0022 | U | | < 0.0055 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | < 0.0023 | U | | 0.00059 | J | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0058 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | < 0.0026 | U | | < 0.0066 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0026 | U | | < 0.0066 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | < 0.002 | U | | < 0.0049 | U | | < 0.002 | U | | < 0.002 | U | | < 0.002 | U | | < 0.002 | U | | < 0.0049 | U | UJ |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | < 0.0024 | U | | 0.002 | J | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.006 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | < 0.0023 | U | | < 0.0057 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0023 | U | | < 0.0057 | U | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | < 0.0025 | U | | 0.0049 | J | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0025 | U | | < 0.0061 | U | UJ |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | < 0.0028 | U | | < 0.007 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.007 | U | UJ |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | < 0.0024 | U | | 0.0085 | | J | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.0024 | U | | < 0.006 | U | UJ |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | < 0.0028 | U | | 0.0039 | J | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.0028 | U | | < 0.007 | U | UJ |

Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | Vinyl chloride | | | Xylenes (total) | | | 1,2-Diphenylhydrazine | | | 1-Methylnaphthalene | | | 2,4,5-Trichlorophenol | | | 2,4,6-Trichlorophenol | | | 2,4-Dichlorophenol | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | < 0.0022 | U | | < 0.0022 | | U | < 0.29 | U | | < 0.29 | U | UJ | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | < 0.0023 | U | | 0.00068 | | J | < 0.26 | U | | < 0.26 | U | UJ | < 0.52 | U | | < 0.52 | U | | < 0.52 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | < 0.0026 | U | | < 0.0026 | | U | < 0.27 | U | | < 0.27 | U | | < 0.54 | U | | < 0.54 | U | | < 0.54 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | < 0.002 | U | | 0.0012 | | J | < 0.3 | U | | < 0.3 | U | | < 0.61 | U | | < 0.61 | U | | < 0.61 | U | |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | < 0.0024 | U | | 0.0057 | | | < 0.31 | U | | < 0.31 | U | | < 0.63 | U | | < 0.63 | U | | < 0.63 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | < 0.0023 | U | | < 0.0023 | | U | < 0.3 | U | | < 0.3 | U | | < 0.59 | U | | < 0.59 | U | | < 0.59 | U | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | < 0.0025 | U | | 0.0026 | | | < 0.3 | U | | < 0.3 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | < 0.0028 | U | | < 0.0028 | | U | < 0.28 | U | | < 0.28 | U | | < 0.55 | U | | < 0.55 | U | | < 0.55 | U | |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | < 0.0024 | U | | 0.0072 | J | | < 0.34 | U | | < 0.34 | U | | < 0.67 | U | | < 0.67 | U | | < 0.67 | U | |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | < 0.0028 | U | | < 0.0028 | | U | < 0.3 | U | | < 0.3 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | |

SEE LAST PAGE OF TABLE FOR NOTES

Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | 2,4-Dimethylphenol | | | 2,4-Dinitrophenol | | | 2,4-Dinitrotoluene | | | 2,6-Dinitrotoluene | | | 2-Chloronaphthalene | | | 2-Chlorophenol | | | 2-Methylnaphthalene | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | < 0.57 | U | | < 1.1 | U | | < 0.57 | U | | < 0.57 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | < 0.52 | U | | < 1 | U | | < 0.52 | U | | < 0.52 | U | | < 0.26 | U | | < 0.26 | U | | < 0.26 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | < 0.54 | U | | < 1.1 | U | | < 0.54 | U | | < 0.54 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | < 0.61 | U | | < 1.2 | U | | < 0.61 | U | | < 0.61 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | < 0.63 | U | | < 1.3 | U | | < 0.63 | U | | < 0.63 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | < 0.59 | U | | < 1.2 | U | | < 0.59 | U | | < 0.59 | U | | < 0.3 | U | | < 0.3 | U | | 0.0784 | J | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | < 0.6 | U | | < 1.2 | U | | < 0.6 | U | | < 0.6 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | < 0.55 | U | | < 1.1 | U | | < 0.55 | U | | < 0.55 | U | | < 0.28 | U | | < 0.28 | U | | < 0.28 | U | |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | < 0.67 | U | | < 1.3 | U | | < 0.67 | U | | < 0.67 | U | | < 0.34 | U | | < 0.34 | U | | < 0.34 | U | |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | < 0.6 | U | | < 1.2 | U | | < 0.6 | U | | < 0.6 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | |

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Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | 2-Methylphenol (o-Cresol) | | | 2-Nitroaniline | | | 2-Nitrophenol | | | 3 & 4-Methylphenol (m & p-Cresol) | | | 3,3'-Dichlorobenzidine | | | 3-Nitroaniline | | | 4,6-Dinitro-2-methylphenol (4,6-dinitro-o-cresol) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | | < 0.57 | U | | < 0.29 | U | | < 0.57 | U | | < 0.57 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | < 0.52 | U | | < 0.52 | U | | < 0.52 | U | | < 0.52 | U | | < 0.26 | U | | < 0.52 | U | | < 0.52 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | < 0.54 | U | | < 0.54 | U | | < 0.54 | U | | < 0.54 | U | | < 0.27 | U | | < 0.54 | U | | < 0.54 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | < 0.61 | U | | < 0.61 | U | | < 0.61 | U | | < 0.61 | U | | < 0.3 | U | | < 0.61 | U | | < 0.61 | U | |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | < 0.63 | U | | < 0.63 | U | | < 0.63 | U | | < 0.63 | U | | < 0.31 | U | | < 0.63 | U | | < 0.63 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | < 0.59 | U | | < 0.59 | U | | < 0.59 | U | | < 0.59 | U | | < 0.3 | U | | < 0.59 | U | | < 0.59 | U | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.3 | U | | < 0.6 | U | | < 0.6 | U | |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | < 0.55 | U | | < 0.55 | U | | < 0.55 | U | | < 0.55 | U | | < 0.28 | U | | < 0.55 | U | | < 0.55 | U | |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | < 0.67 | U | | < 0.67 | U | | < 0.67 | U | | < 0.67 | U | | < 0.34 | U | | < 0.67 | U | | < 0.67 | U | |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.6 | U | | < 0.3 | U | | < 0.6 | U | | < 0.6 | U | |

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Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | 4-Bromophenyl phenyl ether | | | 4-Chloro-3-methylphenol (p-Chloro-m-cresol) | | | 4-Chlorophenyl phenyl ether | | | 4-Nitrophenol | | | 4-Nitrophenylamine | | | Acenaphthene | | | Acenaphthylene | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | < 0.29 | U | | < 0.57 | U | | < 0.29 | U | | < 1.1 | U | | < 0.57 | U | | < 0.29 | U | | < 0.29 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | < 0.26 | U | | < 0.52 | U | | < 0.26 | U | | < 1 | U | | < 0.52 | U | | < 0.26 | U | | < 0.26 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | < 0.27 | U | | < 0.54 | U | | < 0.27 | U | | < 1.1 | U | | < 0.54 | U | | < 0.27 | U | | < 0.27 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | < 0.3 | U | | < 0.61 | U | | < 0.3 | U | | < 1.2 | U | | < 0.61 | U | | < 0.3 | U | | < 0.3 | U | |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | < 0.31 | U | | < 0.63 | U | | < 0.31 | U | | < 1.3 | U | | < 0.63 | U | | < 0.31 | U | | < 0.31 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | < 0.3 | U | | < 0.59 | U | | < 0.3 | U | | < 1.2 | U | | < 0.59 | U | | < 0.3 | U | | < 0.3 | U | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | < 0.3 | U | | < 0.6 | U | | < 0.3 | U | | < 1.2 | U | | < 0.6 | U | | < 0.3 | U | | < 0.3 | U | |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | < 0.28 | U | | < 0.55 | U | | < 0.28 | U | | < 1.1 | U | | < 0.55 | U | | < 0.28 | U | | < 0.28 | U | |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | < 0.34 | U | | < 0.67 | U | | < 0.34 | U | | < 1.3 | U | | < 0.67 | U | | < 0.34 | U | | < 0.34 | U | |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | < 0.3 | U | | < 0.6 | U | | < 0.3 | U | | < 1.2 | U | | < 0.6 | U | | < 0.3 | U | | < 0.3 | U | |

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Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | Aniline | | | Anthracene | | | Benzo(a)anthracene | | | Benzo(a)pyrene | | | Benzo(b)fluoranthene | | | Benzo(g,h,i)perylene | | | Benzo(k)fluoranthene | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | < 0.57 | U | UJ | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | < 0.52 | U | UJ | < 0.26 | U | | < 0.26 | U | | < 0.26 | U | | < 0.26 | U | | < 0.26 | U | | < 0.26 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | < 0.54 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | < 0.61 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | < 0.63 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | < 0.59 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | < 0.6 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | < 0.55 | U | | < 0.28 | U | | < 0.28 | U | | < 0.28 | U | | < 0.28 | U | | < 0.28 | U | | < 0.28 | U | |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | < 0.67 | U | | < 0.34 | U | | < 0.34 | U | | < 0.34 | U | | < 0.34 | U | | < 0.34 | U | | < 0.34 | U | |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | < 0.6 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | |

SEE LAST PAGE OF TABLE FOR NOTES

Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | Benzoic Acid | | | Benzyl alcohol | | | bis(2-Chloroethoxy)methane | | | bis(2-Chloroethyl)ether | | | Bis(2-chloroisopropyl)ether | | | bis(2-Ethylhexyl)phthalate | | | Butyl benzyl phthalate | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | < 0.57 | U | | < 0.57 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | 0.0384 | J | | < 0.29 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | < 0.52 | U | | < 0.52 | U | | < 0.26 | U | | < 0.26 | U | | < 0.26 | U | | 0.0813 | J | | < 0.26 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | < 0.54 | U | | < 0.54 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | < 0.61 | U | | < 0.61 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | 0.0319 | J | | < 0.3 | U | |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | < 0.63 | U | | < 0.63 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | < 0.59 | U | | < 0.59 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | < 0.6 | U | | < 0.6 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | 0.114 | J | | < 0.3 | U | |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | < 0.55 | U | | < 0.55 | U | | < 0.28 | U | | < 0.28 | U | | < 0.28 | U | | 0.0963 | J | | < 0.28 | U | |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | < 0.67 | U | | < 0.67 | U | | < 0.34 | U | | < 0.34 | U | | < 0.34 | U | | < 0.34 | U | | < 0.34 | U | |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | < 0.6 | U | | < 0.6 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | |

Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | Chrysene (1,2-Benzphenanthracene) | | | Dibenzo(a,h)anthracene | | | Dibenzofuran | | | Diethyl phthalate | | | Dimethyl phthalate | | | Di-n-butyl phthalate | | | Di-n-octyl phthalate | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | < 0.26 | U | | < 0.26 | U | | < 0.26 | U | | < 0.26 | U | | < 0.26 | U | | < 0.26 | U | | < 0.26 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | 0.0238 | J | | < 0.3 | U | | < 0.3 | U | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | < 0.28 | U | | < 0.28 | U | | < 0.28 | U | | < 0.28 | U | | < 0.28 | U | | < 0.28 | U | | < 0.28 | U | |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | < 0.34 | U | | < 0.34 | U | | < 0.34 | U | | < 0.34 | U | | < 0.34 | U | | < 0.34 | U | | < 0.34 | U | |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | |

SEE LAST PAGE OF TABLE FOR NOTES

Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | Fluoranthene | | | Fluorene | | | Hexachlorobenzene | | | Hexachlorocyclopentadiene | | | Hexachloroethane | | | Indeno(1,2,3-cd)pyrene | | | Isophorone (3,5,5-trimethyl-2-cyclohexene-1-one) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.57 | U | UJ | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | < 0.26 | U | | < 0.26 | U | | < 0.26 | U | | < 0.52 | U | UJ | < 0.26 | U | | < 0.26 | U | | < 0.26 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.54 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.61 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | < 0.63 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.59 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.6 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | < 0.28 | U | | < 0.28 | U | | < 0.28 | U | | < 0.55 | U | | < 0.28 | U | | < 0.28 | U | | < 0.28 | U | |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | < 0.34 | U | | < 0.34 | U | | < 0.34 | U | | < 0.67 | U | | < 0.34 | U | | < 0.34 | U | | < 0.34 | U | |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.6 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | |

SEE LAST PAGE OF TABLE FOR NOTES

Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | Naphthalene | | | Nitrobenzene | | | N-Nitrosodimethylamine | | | N-Nitrosodi-n-propylamine | | | N-Nitrosodiphenylamine | | | p-Chloroaniline | | | Pentachlorophenol | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | | | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.57 | U | | < 0.57 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | | | | < 0.26 | U | | < 0.26 | U | | < 0.26 | U | | < 0.26 | U | | < 0.52 | U | | < 0.52 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | | | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.54 | U | | < 0.54 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | | | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.61 | U | | < 0.61 | U | |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | | | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | < 0.63 | U | | < 0.63 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | 0.029 | J | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.59 | U | | < 0.59 | U | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | | | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.6 | U | | < 0.6 | U | |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | | | | < 0.28 | U | | < 0.28 | U | | < 0.28 | U | | < 0.28 | U | | < 0.55 | U | | < 0.55 | U | |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | | | | < 0.34 | U | | < 0.34 | U | | < 0.34 | U | | < 0.34 | U | | < 0.67 | U | | < 0.67 | U | |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | | | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.6 | U | | < 0.6 | U | |

Table E-1
SVE Interim

| Location | Sample ID | Depth | Sample Date | Phenanthrene | | | Phenol | | | Pyrene | | | Pyridine | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals | Result (mg/kg) | Lab Quals | URS Quals |
| SVE-25(S) | SVE-25(S) 12-14 | 12 -14 ft | 5/3/2011 | < 0.29 | U | | < 0.29 | U | | < 0.29 | U | | < 0.57 | U | |
| | SVE-25(S) 19-21 | 19 - 21 ft | 5/3/2011 | < 0.26 | U | | < 0.26 | U | | < 0.26 | U | | < 0.52 | U | |
| SVE-4 | SVE-4-10-12' | 10 - 12 ft | 5/12/2011 | < 0.27 | U | | < 0.27 | U | | < 0.27 | U | | < 0.54 | U | |
| VMP-31 | VMP-31-10-11 | 10 - 11 ft | 5/10/2011 | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.61 | U | |
| | VMP-31-17-18.5 | 17 - 18.5 ft | 5/10/2011 | < 0.31 | U | | < 0.31 | U | | < 0.31 | U | | < 0.63 | U | |
| | VMP-31-17-18.5-D | 17 - 18.5 ft | 5/10/2011 | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.59 | U | |
| | VMP-31-30-31 | 30 - 31 ft | 5/10/2011 | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.6 | U | |
| VMP-32 | VMP-32-10-12 | 10 - 12 ft | 5/10/2011 | < 0.28 | U | | < 0.28 | U | | < 0.28 | U | | < 0.55 | U | |
| | VMP-32-21.5-22 | 21.5 - 22 ft | 5/10/2011 | < 0.34 | U | | < 0.34 | U | | < 0.34 | U | | < 0.67 | U | |
| | VMP-32-30-31 | 30 - 31 ft | 5/10/2011 | < 0.3 | U | | < 0.3 | U | | < 0.3 | U | | < 0.6 | U | |

Notes:
**Lab Qualifiers**
J = Estimated value; results between the MDL and RL
U = Compound analyzed for but not detected above the RL
**URS Qualifiers**
J = Estimated detection
UJ = Estimated non-detect
U = Non-detect, e.g. blank contamination

# SVE Interim System Data Review

**Laboratory SDG: M99906**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 9/21/2011**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| SVE-25(S) 12-14 | SVE-25(S) 19-21 |
| TB-050311 | - |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC and SVOC LCS recoveries were outside evaluation criteria. SVOC MS/MSD recoveries and one MS/MSD RPD were outside evaluation criteria in sample SVE-25(S) 12-14. Professional judgment was used to qualify acetone in sample SVE-25(S) 19-21. These issues are addressed further in the appropriate sections below.

The cooler receipt form narrative indicated samples were received by the laboratory at 1.7° C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSP1753-BS | VOCs | Acrolein | **432** | N/A | 70-130 |
| MSR804-BS/BSD | VOCs | Acrolein | 123/**203** | **49** | 70-130/25 |
| MSR804-BS/BSD | VOCs | Acrylonitrile | **562/552** | 2 | 70-130/25 |
| MSR804-BS/BSD | VOCs | 2-Chloroethyl vinyl ether | **41/43** | 5 | 70-130/25 |
| MSR804-BS/BSD | VOCs | Isopropylbenzene | **136/132** | 3 | 70-130/25 |
| OP24854-BS/BSD | SVOCs | Aniline | 42/**38** | 12 | 40-140/30 |
| OP24854-BS/BSD | SVOCs | Hexachlorocyclopentadiene | **38/39** | 0 | 40-140/30 |
| OP24854-BS/BSD | SVOCs | 1-Methylnaphthalene | **0/0** | N/A | 40-140/30 |

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. Professional judgment was used to not reject 1-Methylnaphthalene due to analyte not being present in spiking solution. LCS MSR804-BS/BSD was associated with trip blank sample TB-050311. Trip blank samples are quality control samples and are not qualified.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| SVE-25(S) 12-14 | SVOCs | Aniline | **UJ** |
| SVE-25(S) 12-14 | SVOCs | Hexachlorocyclopentadiene | **UJ** |
| SVE-25(S) 12-14 | SVOCs | 1-Methylnaphthalene | **UJ** |
| SVE-25(S) 19-21 | SVOCs | Aniline | **UJ** |
| SVE-25(S) 19-21 | SVOCs | Hexachlorocyclopentadiene | **UJ** |
| SVE-25(S) 19-21 | SVOCs | 1-Methylnaphthalene | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, sample SVE-25(S) 12-14 was spiked and analyzed for SVOCs.

*Were MS/MSD recoveries within evaluation criteria?*

No

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/ RPD Criteria |
|---|---|---|---|---|---|
| SVE-25(S) 12-14 | SVOCs | Benzoic Acid | **18/12** | **35** | 30-130/30 |
| SVE-25(S) 12-14 | SVOCs | Aniline | 41/**35** | 14 | 40/140/30 |
| SVE-25(S) 12-14 | SVOCs | Hexachlorocyclopentadiene | **26/29** | 12 | 40-140/30 |
| SVE-25(S) 12-14 | SVOCs | 1-Methylnaphthalene | **0/0** | N/A | 40-140/30 |

USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone and LCS recoveries were within evaluation criteria with the exception of compounds listed and qualified as appropriate in Section 5.0 of this data review. No further qualification of data was required.

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

No

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

Yes

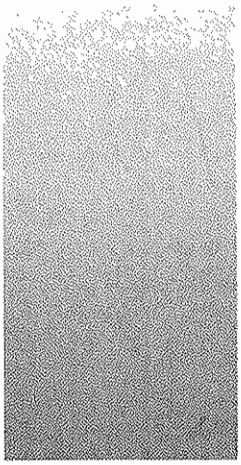
Professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations greater than two times (2X) the RL since acetone is not representative of site conditions. Additionally, USEPA Method 5035A states that acidification of certain soils with sodium bisulfate may produce a false positive acetone artifact of 100-200 ppb, or more.

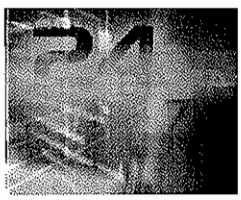
Acetone reported at concentrations less than 200 ppb (ug/kg) were qualified.

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| SVE-25(S) 19-21 | Acetone | 33.1 | **U** | Professional Judgment |

New England ACCUTEST LABORATORIES

06/08/11





## Technical Report for

Shell Oil

URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

INC#97216640 / SAP#340061

Accutest Job Number: M99906

Sampling Date: 05/03/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **65**

Reviewed on 9/21/2011

Reza Tand
Lab Director

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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# Sample Summary

Shell Oil

Job No: M99906

URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| M99906-1 | 05/03/11 | 13:25 | | 05/04/11 | SO | Soil | SVE-25(S) 12-14 |
| M99906-2 | 05/03/11 | 13:40 | | 05/04/11 | SO | Soil | SVE-25(S) 19-21 |
| M99906-3 | 05/03/11 | 00:00 | | 05/04/11 | AQ | Trip Blank Water | TB-050311 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | M99906 |
| **Site:** | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Ha | **Report Date** | 5/19/2011 3:20:08 PM |

2 Sample(s), 1 Trip Blank were collected on 05/03/2011 and were received at Accutest on 05/04/2011 properly preserved, at 1.7 Deg. C and intact. These Samples received an Accutest job number of M99906. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSR804

- All samples were analyzed within the recommended method holding time.
- Sample(s) M99949-3MS, M99949-3MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- BS/BSD Recovery(s) for 2-Chloroethyl vinyl ether, Isopropylbenzene are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,4-Dioxane, 2-Chloroethyl vinyl ether, Acrolein are outside control limits. Outside control limits dne to possible matrix interferenee. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 2-Chloroethyl vinyl ether are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for 1,4-Dioxane are outside control limits for sample M99949-3MSD. High RPD due to possible matrix interfcrenee and/or sample non-homogeneity.
- MSR804-BSD for Acrolein, Acrylonitrile: Outside control limits. Associated samples are non-deteet for this compound.
- RPD of MSR804-BSD for Acrolein: Outside control limits. Associated samples are non-detect for this compound.
- M99949-3MS/MSD for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.
- RPD of M99949-3MSD for Acrolein: Outside control limits. Associated samples are non-deteet for this compound.
- MSR804-BS for Acrylonitrile: Outside control limits. Associated samples are non-detect for this compound.

**Matrix** SO **Batch ID:** MSP1753

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC11-1MS, MC11-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Matrix Spike Recovery(s) for 1,1-Dichloropropene, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dibromo-3-chloropropane, 1,2-Dibromoethane, 1,2-Dichlorobenzene, 1,2-Dichloroethane, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,3-Dichloropropane, 1,4-Dichlorobenzene, 1.4-Dioxane, 2,2-Dichloropropane, 2-Hexanone, Benzene, Bromobenzene, Bromochloromethane, Bromodichloromethane, Bromoform, Bromomethane, Carbon disulfide, Chlorobenzene, cis-1,2-Dichloroethene, cis-1,3-Dichloropropene, Ethylbenzene, Hexachlorobutadiene, m,p-Xylene, Methylene bromide, n-Butylbenzene, n-Propylbenzene, Naphthalene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, p-Isopropyltoluene, see-Butylbenzene, Styrene, Tetrachloroethene, Toluene, trans-1,2-Dichloroethene, trans-1,3-Dichloropropene, Trichloroethene, Vinyl Acetate, Xylene (total) are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,1,2-Trichloroethane, 1,1-Dichloropropene, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dibromoethane, 1.2-Dichlorobenzene, 1,2-Dichloroethane, 1,3-Dichlorobenzene, 1,3-Dichloropropane, 1,4-Dichlorobenzene, 1,4-Dioxane, 2,2-Dichloropropane, 2-Hexanone, Bromobenzene, Bromochloromethane, Bromodichloromethane, Bromoform, Carbon disulfide, Chlorobenzene, cis-1,2-Dichloroethene, cis-1,3-Dichloropropene, Dibromochloromethane, Ethylbenzene, Hexachlorobutadiene, m,p-Xylene, Methylene bromide, n-Butylbenzene, n-Propylbenzene, o-Chlorotoluene, o-Xylene, p-Chlorotoluene, Styrene, Tetrachloroethene, Toluene, trans-1,2-Dichloroethene, trans-1,3-Dichloropropene, Trichloroethene, Vinyl Acetate, Xylene (total), Acetone, Naphthalene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

## Volatiles by GCMS By Method SW846 8260B

| Matrix SO | Batch ID: MSP1753 |
|---|---|

- RPD(s) for MSD for Acetone, Acrylonitrile, Naphthalene are outside control limits for sample MC11-1MSD. High RPD dne to possible matrix interferenee and/or sample non-homogeneity.
- BS/MS/MSD for Acrolein: Outside control limits. Associated samples are non-detect for this compound.
- MC11-1MS/MSD for 4-Bromofluorobenzene: Outside control limits due to possible matrix interference. Confirmed by reanalysis.
- MC11-1MS, MC11-1MSD has internal standard outside control limits due to possible matrix interferenee. Confirmed by reanalysis.

## Extractables by GCMS By Method SW846 8270C

| Matrix SO | Batch ID: OP24854 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) M99906-1MS, M99906-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MS/MSD Recovery(s) for 1-Methylnaphthalene, Benzoic acid are outside control limits. Ontside control limits due to possible matrix interference. Refer to Blank Spike.
- RPD(s) for MSD for Benzoic acid are outside control limits for sample OP24854-MSD. High RPD due to possible matrix interferenee and/or sample non-homogeneity.
- OP24854-BS/MS for Hexachloroeyclopentadiene: Outside control limits. Blank Spike meets program technical reqnirements.
- Calibration standards MSI2583-ICC2583, MSI2583-ICV2583, MSI2595-CC2583 are not associated with this job.
- OP24854-BS/BSD for 1-Methylnaphthalene is ontside eontrol limits. Analyte not present in spike solution.
- BSD/MSD for Aniline, Hexachloroeyclopentadiene: Blank Spike meets program technical reqnirements.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN34833 |
|---|---|

- Sample(s) M99847-9DUP were used as the QC samples for Solids, Percent.

The Acentest Laboratories of New England certifies that all analysis were performed within method speeifieation. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the eover page has authorized the release of this report(M99906).

## Sample Results

Report of Analysis

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-25(S) 12-14 | | |
| Lab Sample ID: | M99906-1 | Date Sampled: | 05/03/11 |
| Matrix: | SO - Soil | Date Received: | 05/04/11 |
| Method: | SW846 8260B | Percent Solids: | 86.2 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P52917.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.29 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.5 | 5.5 | ug/kg | |
| 107-02-8 | Acrolein | ND | 27 | 19 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.5 | 0.87 | ug/kg | |
| 71-43-2 | Benzene | 3.6 | 0.55 | 0.12 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.5 | 0.16 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.5 | 0.52 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.2 | 0.21 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.2 | 1.1 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.2 | 0.38 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.5 | 1.6 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.5 | 0.46 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.5 | 0.40 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.5 | 0.25 | ug/kg | |
| 75-15-0 | Carbon disnlfide | ND | 5.5 | 0.20 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.2 | 0.21 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.2 | 0.24 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.5 | 0.35 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.5 | 5.5 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.2 | 0.18 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.5 | 0.14 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.5 | 0.21 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.5 | 0.24 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.5 | 0.78 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.2 | 1.1 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.2 | 0.17 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.2 | 0.34 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.2 | 0.33 | ng/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.2 | 0.32 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.2 | 0.22 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.2 | 0.18 | ng/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.2 | 0.13 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.2 | 0.15 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-25(S) 12-14 | | |
| Lab Sample ID: | M99906-1 | Date Sampled: | 05/03/11 |
| Matrix: | SO - Soil | Date Received: | 05/04/11 |
| Method: | SW846 8260B | Percent Solids: | 86.2 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.2 | 0.22 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.2 | 0.21 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.2 | 0.19 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.5 | 0.12 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.5 | 0.21 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.5 | 0.23 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.2 | 0.55 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.2 | 1.1 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 27 | 8.5 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.5 | 0.14 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.2 | 0.12 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.5 | 0.79 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.5 | 0.94 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.5 | 0.27 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.5 | 0.42 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.2 | 0.14 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.5 | 1.1 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.5 | 1.1 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.2 | 0.18 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.5 | 0.55 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.5 | 0.31 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.5 | 0.18 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.5 | 0.18 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.2 | 0.19 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.2 | 0.18 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.5 | 0.19 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.5 | 0.84 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.5 | 0.56 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.2 | 0.14 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.2 | 0.14 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.2 | 0.23 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.2 | 0.17 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.5 | 0.18 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.5 | 0.28 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.5 | 0.24 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.5 | 3.0 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.2 | 0.29 | ug/kg | |
| | m,p-Xylene | ND | 2.2 | 0.38 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.2 | 0.14 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.2 | 0.14 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reportiug Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-25(S) 12-14 | | |
| Lab Sample ID: | M99906-1 | Date Sampled: | 05/03/11 |
| Matrix: | SO - Soil | Date Received: | 05/04/11 |
| Method: | SW846 8260B | Percent Solids: | 86.2 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 111% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 117% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 113% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blauk
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.1

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-25(S) 12-14 | | |
| Lab Sample ID: | M99906-1 | Date Sampled: | 05/03/11 |
| Matrix: | SO - Soil | Date Received: | 05/04/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 86.2 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | I72440.D | 1 | 05/12/11 | KR | 05/09/11 | OP24854 | MSI2598 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 20.4 g | 1.0 ml |
| Run #2 | | |

ABN Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | ND | 570 | 44 | ug/kg | |
| 95-57-8 | 2-Chlorophenol | ND | 290 | 15 | ug/kg | |
| 59-50-7 | 4-Chloro-3-methyl phenol | ND | 570 | 20 | ug/kg | |
| 120-83-2 | 2,4-Dichlorophenol | ND | 570 | 33 | ug/kg | |
| 105-67-9 | 2,4-Dimethylphenol | ND | 570 | 57 | ug/kg | |
| 51-28-5 | 2,4-Dinitrophenol | ND | 1100 | 290 | ug/kg | |
| 534-52-1 | 4,6-Dinitro-o-cresol | ND | 570 | 290 | ug/kg | |
| 95-48-7 | 2-Methylphenol | ND | 570 | 16 | ug/kg | |
| | 3&4-Methylphenol | ND | 570 | 30 | ug/kg | |
| 88-75-5 | 2-Nitrophenol | ND | 570 | 34 | ug/kg | |
| 100-02-7 | 4-Nitrophenol | ND | 1100 | 290 | ug/kg | |
| 87-86-5 | Pentachlorophenol | ND | 570 | 53 | ug/kg | |
| 108-95-2 | Phenol | ND | 290 | 47 | ug/kg | |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | 570 | 42 | ug/kg | |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | 570 | 39 | ug/kg | |
| 83-32-9 | Acenaphthene | ND | 290 | 24 | ug/kg | |
| 208-96-8 | Acenaphthylene | ND | 290 | 21 | ng/kg | |
| 62-53-3 | Aniline | ND | 570 | 570 | ug/kg | UJ |
| 120-12-7 | Anthracene | ND | 290 | 22 | ug/kg | |
| 56-55-3 | Benzo(a)anthracene | ND | 290 | 10 | ug/kg | |
| 50-32-8 | Benzo(a)pyrene | ND | 290 | 17 | ug/kg | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 290 | 33 | ug/kg | |
| 191-24-2 | Benzo(g,h,i)perylene | ND | 290 | 18 | ug/kg | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 290 | 8.4 | ug/kg | |
| 101-55-3 | 4-Bromophenyl phenyl ether | ND | 290 | 23 | ug/kg | |
| 85-68-7 | Butyl benzyl phthalate | ND | 290 | 12 | ug/kg | |
| 100-51-6 | Benzyl Alcohol | ND | 570 | 35 | ug/kg | |
| 91-58-7 | 2-Chloronaphthalene | ND | 290 | 24 | ug/kg | |
| 106-47-8 | 4-Chloroaniline | ND | 570 | 140 | ug/kg | |
| 218-01-9 | Chrysene | ND | 290 | 9.3 | ug/kg | |
| 111-91-1 | bis(2-Chloroethoxy)methane | ND | 290 | 22 | ug/kg | |
| 111-44-4 | bis(2-Chloroethyl)ether | ND | 290 | 6.1 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-25(S) 12-14 | | |
| Lab Sample ID: | M99906-1 | Date Sampled: | 05/03/11 |
| Matrix: | SO - Soil | Date Received: | 05/04/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 86.2 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

ABN Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 108-60-1 | bis(2-Chloroisopropyl)ether | ND | 290 | 27 | ug/kg | |
| 7005-72-3 | 4-Chlorophenyl phenyl ether | ND | 290 | 26 | ug/kg | |
| 122-66-7 | 1,2-Diphenylhydraziue | ND | 290 | 24 | ug/kg | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | 570 | 140 | ug/kg | |
| 606-20-2 | 2,6-Dinitrotoluene | ND | 570 | 27 | ug/kg | |
| 91-94-1 | 3,3'-Dichlorobenzidine | ND | 290 | 6.8 | ug/kg | |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | 290 | 18 | ug/kg | |
| 132-64-9 | Dibenzofuran | ND | 290 | 24 | ug/kg | |
| 84-74-2 | Di-n-butyl phthalate | ND | 290 | 26 | ug/kg | |
| 117-84-0 | Di-n-octyl phthalate | ND | 290 | 15 | ug/kg | |
| 84-66-2 | Diethyl phthalate | ND | 290 | 25 | ug/kg | |
| 131-11-3 | Dimethyl phthalate | ND | 290 | 20 | ug/kg | |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 38.4 | 290 | 20 | ug/kg | J |
| 206-44-0 | Fluoranthene | ND | 290 | 9.7 | ug/kg | |
| 86-73-7 | Fluorene | ND | 290 | 6.3 | ug/kg | |
| 118-74-1 | Hexachlorobenzene | ND | 290 | 25 | ug/kg | |
| 77-47-4 | Hexachlorocyclopentadiene | ND | 570 | 3.8 | ug/kg | UJ |
| 67-72-1 | Hexachloroethane | ND | 290 | 23 | ug/kg | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 290 | 18 | ug/kg | |
| 78-59-1 | Isophorone | ND | 290 | 28 | ug/kg | |
| 90-12-0 | 1-Methylnaphthalene | ND | 290 | 290 | ug/kg | UJ |
| 91-57-6 | 2-Methylnaphthalene | ND | 290 | 24 | ug/kg | |
| 88-74-4 | 2-Nitroaniline | ND | 570 | 140 | ug/kg | |
| 99-09-2 | 3-Nitroaniline | ND | 570 | 140 | ug/kg | |
| 100-01-6 | 4-Nitroaniline | ND | 570 | 21 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 290 | 6.6 | ug/kg | |
| 98-95-3 | Nitrobenzene | ND | 290 | 8.4 | ug/kg | |
| 62-75-9 | n-Nitrosodimethylamine | ND | 290 | 23 | ug/kg | |
| 621-64-7 | N-Nitroso-di-n-propylamine | ND | 290 | 18 | ug/kg | |
| 86-30-6 | N-Nitrosodipheuylamine | ND | 290 | 15 | ug/kg | |
| 85-01-8 | Phenanthrene | ND | 290 | 7.4 | ug/kg | |
| 129-00-0 | Pyrene | ND | 290 | 9.2 | ug/kg | |
| 110-86-1 | Pyridine | ND | 570 | 570 | ug/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 68% | | 30-130% |
| 4165-62-2 | Phenol-d5 | 65% | | 30-130% |
| 118-79-6 | 2,4,6-Tribromophenol | 70% | | 30-130% |
| 4165-60-0 | Nitrobenzene-d5 | 60% | | 30-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-25(S) 12-14 | | |
| Lab Sample ID: | M99906-1 | Date Sampled: | 05/03/11 |
| Matrix: | SO - Soil | Date Received: | 05/04/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 86.2 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

ABN Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 321-60-8 | 2-Fluorobiphenyl | 68% | | 30-130% |
| 1718-51-0 | Terphenyl-d14 | 83% | | 30-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-25(S) 19-21 | | |
| Lab Sample ID: | M99906-2 | Date Sampled: | 05/03/11 |
| Matrix: | SO - Soil | Date Received: | 05/04/11 |
| Method: | SW846 8260B | Percent Solids: | 94.6 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P52918.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.57 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~33.1~~ | ~~5.8~~ 33.1 | 5.8 | ug/kg | U |
| 107-02-8 | Acrolein | ND | 29 | 20 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.8 | 0.92 | ug/kg | |
| 71-43-2 | Benzene | 1.4 | 0.58 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.8 | 0.17 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.8 | 0.55 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.3 | 0.22 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.3 | 1.2 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.3 | 0.40 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.8 | 1.7 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.8 | 0.49 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.8 | 0.42 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.8 | 0.26 | ug/kg | |
| 75-15-0 | Carbon disnlfide | ND | 5.8 | 0.22 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.3 | 0.22 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.3 | 0.25 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.8 | 0.37 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.8 | 5.8 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.3 | 0.19 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.8 | 0.15 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.8 | 0.22 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.8 | 0.25 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.8 | 0.82 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.3 | 1.2 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.3 | 0.17 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.3 | 0.36 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.3 | 0.35 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.3 | 0.34 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.3 | 0.23 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.3 | 0.19 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.3 | 0.14 | ng/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.3 | 0.16 | ng/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-25(S) 19-21 | | |
| Lab Sample ID: | M99906-2 | Date Sampled: | 05/03/11 |
| Matrix: | SO - Soil | Date Received: | 05/04/11 |
| Method: | SW846 8260B | Percent Solids: | 94.6 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.3 | 0.23 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.3 | 0.22 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.3 | 0.20 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.8 | 0.12 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.8 | 0.23 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.8 | 0.24 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.3 | 0.58 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.3 | 1.2 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 29 | 9.0 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.8 | 0.15 | ug/kg | |
| 100-41-4 | Ethylbenzene | 0.35 | 2.3 | 0.13 | ug/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 5.8 | 0.84 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.8 | 0.99 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.8 | 0.28 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.8 | 0.45 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.3 | 0.15 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.8 | 1.2 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.8 | 1.2 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.3 | 0.19 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.8 | 0.58 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.8 | 0.32 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.8 | 0.19 | ug/kg | |
| 630-20-6 | 1,I,1,2-Tetrachloroethane | ND | 5.8 | 0.19 | ug/kg | |
| 79-34-5 | 1,I,2,2-Tetrachloroethane | ND | 2.3 | 0.20 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.3 | 0.19 | ug/kg | |
| 108-88-3 | Toluene | 0.59 | 5.8 | 0.20 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.8 | 0.88 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.8 | 0.59 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.3 | 0.15 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.3 | 0.15 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.3 | 0.24 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.3 | 0.18 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.8 | 0.19 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.8 | 0.30 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.8 | 0.25 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.8 | 3.1 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.3 | 0.31 | ug/kg | |
| | m,p-Xylene | 0.68 | 2.3 | 0.40 | ug/kg | J |
| 95-47-6 | o-Xylene | ND | 2.3 | 0.15 | ug/kg | |
| 1330-20-7 | Xylene (total) | 0.68 | 2.3 | 0.15 | ug/kg | J |

ND = Not detected MDL - Method Detection Limit
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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-25(S) 19-21 | | |
| Lab Sample ID: | M99906-2 | Date Sampled: | 05/03/11 |
| Matrix: | SO - Soil | Date Received: | 05/04/11 |
| Method: | SW846 8260B | Percent Solids: | 94.6 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 117% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 117% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 112% | | 70-130% |

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B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-25(S) 19-21 | | |
| Lab Sample ID: | M99906-2 | Date Sampled: | 05/03/11 |
| Matrix: | SO - Soil | Date Received: | 05/04/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 94.6 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | I72441.D | 1 | 05/12/11 | KR | 05/09/11 | OP24854 | MSI2598 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 20.3 g | 1.0 ml |
| Run #2 | | |

ABN Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | ND | 520 | 40 | ug/kg | |
| 95-57-8 | 2-Chlorophenol | ND | 260 | 14 | ug/kg | |
| 59-50-7 | 4-Chloro-3-methyl phenol | ND | 520 | 18 | ug/kg | |
| 120-83-2 | 2,4-Dichlorophenol | ND | 520 | 31 | ug/kg | |
| 105-67-9 | 2,4-Dimethylphenol | ND | 520 | 52 | ug/kg | |
| 51-28-5 | 2,4-Dinitrophenol | ND | 1000 | 260 | ug/kg | |
| 534-52-1 | 4,6-Dinitro-o-cresol | ND | 520 | 260 | ug/kg | |
| 95-48-7 | 2-Methylphenol | ND | 520 | 15 | ug/kg | |
| | 3&4-Methylphenol | ND | 520 | 28 | ug/kg | |
| 88-75-5 | 2-Nitrophenol | ND | 520 | 31 | ug/kg | |
| 100-02-7 | 4-Nitrophenol | ND | 1000 | 260 | ug/kg | |
| 87-86-5 | Pentachlorophenol | ND | 520 | 48 | ug/kg | |
| 108-95-2 | Phenol | ND | 260 | 43 | ug/kg | |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | 520 | 39 | ug/kg | |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | 520 | 36 | ug/kg | |
| 83-32-9 | Acenaphthene | ND | 260 | 22 | ug/kg | |
| 208-96-8 | Acenaphthylene | ND | 260 | 20 | ng/kg | |
| 62-53-3 | Aniline | ND | 520 | 520 | ug/kg | UJ |
| 120-12-7 | Anthracene | ND | 260 | 21 | ug/kg | |
| 56-55-3 | Benzo(a)anthracene | ND | 260 | 9.6 | ug/kg | |
| 50-32-8 | Benzo(a)pyrene | ND | 260 | 16 | ug/kg | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 260 | 30 | ug/kg | |
| 191-24-2 | Benzo(g,h,i)perylene | ND | 260 | 17 | ug/kg | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 260 | 7.7 | ug/kg | |
| 101-55-3 | 4-Bromophenyl phenyl ether | ND | 260 | 21 | ug/kg | |
| 85-68-7 | Butyl benzyl phthalate | ND | 260 | 11 | ug/kg | |
| 100-51-6 | Benzyl Alcohol | ND | 520 | 32 | ug/kg | |
| 91-58-7 | 2-Chloronaphthalene | ND | 260 | 22 | ug/kg | |
| 106-47-8 | 4-Chloroaniline | ND | 520 | 130 | ug/kg | |
| 218-01-9 | Chrysene | ND | 260 | 8.5 | ug/kg | |
| 111-91-1 | bis(2-Chloroethoxy)methane | ND | 260 | 20 | ug/kg | |
| 111-44-4 | bis(2-Chloroethyl)ether | ND | 260 | 5.6 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-25(S) 19-21 | | |
| Lab Sample ID: | M99906-2 | Date Sampled: | 05/03/11 |
| Matrix: | SO - Soil | Date Received: | 05/04/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 94.6 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

ABN Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 108-60-1 | bis(2-Chloroisopropyl)ether | ND | 260 | 25 | ug/kg | |
| 7005-72-3 | 4-Chlorophenyl phenyl ether | ND | 260 | 23 | ug/kg | |
| 122-66-7 | 1,2-Diphenylhydrazine | ND | 260 | 22 | ug/kg | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | 520 | 130 | ug/kg | |
| 606-20-2 | 2,6-Dinitrotoluene | ND | 520 | 25 | ug/kg | |
| 91-94-1 | 3,3'-Dichlorobenzidine | ND | 260 | 6.3 | ug/kg | |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | 260 | 17 | ug/kg | |
| 132-64-9 | Dibenzofuran | ND | 260 | 22 | ug/kg | |
| 84-74-2 | Di-n-butyl phthalate | ND | 260 | 24 | ug/kg | |
| 117-84-0 | Di-n-octyl phthalate | ND | 260 | 14 | ug/kg | |
| 84-66-2 | Diethyl phthalate | ND | 260 | 23 | ug/kg | |
| 131-11-3 | Dimethyl phthalate | ND | 260 | 18 | ug/kg | |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 81.3 | 260 | 18 | ug/kg | J |
| 206-44-0 | Fluoranthene | ND | 260 | 8.9 | ug/kg | |
| 86-73-7 | Fluorene | ND | 260 | 5.7 | ug/kg | |
| 118-74-1 | Hexachlorobenzene | ND | 260 | 22 | ug/kg | |
| 77-47-4 | Hexachlorocyclopentadiene | ND | 520 | 3.5 | ug/kg | UJ |
| 67-72-1 | Hexachloroethane | ND | 260 | 21 | ug/kg | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 260 | 16 | ug/kg | |
| 78-59-1 | Isophorone | ND | 260 | 26 | ug/kg | |
| 90-12-0 | 1-Methylnaphthalene | ND | 260 | 260 | ug/kg | UJ |
| 91-57-6 | 2-Methylnaphthalene | ND | 260 | 22 | ug/kg | |
| 88-74-4 | 2-Nitroaniline | ND | 520 | 130 | ug/kg | |
| 99-09-2 | 3-Nitroaniline | ND | 520 | 130 | ug/kg | |
| 100-01-6 | 4-Nitroaniline | ND | 520 | 19 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 260 | 6.0 | ug/kg | |
| 98-95-3 | Nitrobenzene | ND | 260 | 7.7 | ug/kg | |
| 62-75-9 | n-Nitrosodimethylamine | ND | 260 | 21 | ug/kg | |
| 621-64-7 | N-Nitroso-di-n-propylamine | ND | 260 | 17 | ug/kg | |
| 86-30-6 | N-Nitrosodiphenylamine | ND | 260 | 14 | ug/kg | |
| 85-01-8 | Phenanthrene | ND | 260 | 6.7 | ug/kg | |
| 129-00-0 | Pyrene | ND | 260 | 8.4 | ug/kg | |
| 110-86-1 | Pyridine | ND | 520 | 520 | ug/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 71% | | 30-130% |
| 4165-62-2 | Phenol-d5 | 68% | | 30-130% |
| 118-79-6 | 2,4,6-Tribromophenol | 69% | | 30-130% |
| 4165-60-0 | Nitrobenzene-d5 | 64% | | 30-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-25(S) 19-21 | | |
| Lab Sample ID: | M99906-2 | Date Sampled: | 05/03/11 |
| Matrix: | SO - Soil | Date Received: | 05/04/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 94.6 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

ABN Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 321-60-8 | 2-Fluorobiphenyl | 71% | | 30-130% |
| 1718-51-0 | Terphenyl-d14 | 84% | | 30-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB-050311 | | |
| Lab Sample ID: | M99906-3 | Date Sampled: | 05/03/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 05/04/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | R21860.D | 1 | 05/17/11 | TD | n/a | n/a | MSR804 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.6 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.0 | ng/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.35 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.52 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.91 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.62 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.73 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.95 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.1 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.49 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.37 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.53 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.35 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.42 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.61 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.76 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 0.83 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.72 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.81 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.58 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.67 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.3 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.86 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.76 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.74 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.77 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.81 | ng/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.61 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.70 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB-050311 | | |
| Lab Sample ID: | M99906-3 | Date Sampled: | 05/03/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 05/04/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.66 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.74 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.83 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.73 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.44 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.34 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.23 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.23 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 18 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.90 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.61 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 0.56 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.5 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.51 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.45 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.54 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 1.3 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.94 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.75 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.37 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.43 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.68 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.64 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.89 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.39 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.74 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 0.57 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.35 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.72 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.49 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.47 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.61 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.62 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.51 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 0.51 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.86 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.62 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.56 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.56 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB-050311 | | |
| Lab Sample ID: | M99906-3 | Date Sampled: | 05/03/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 05/04/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 102% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 86% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 77% | | 70-130% |

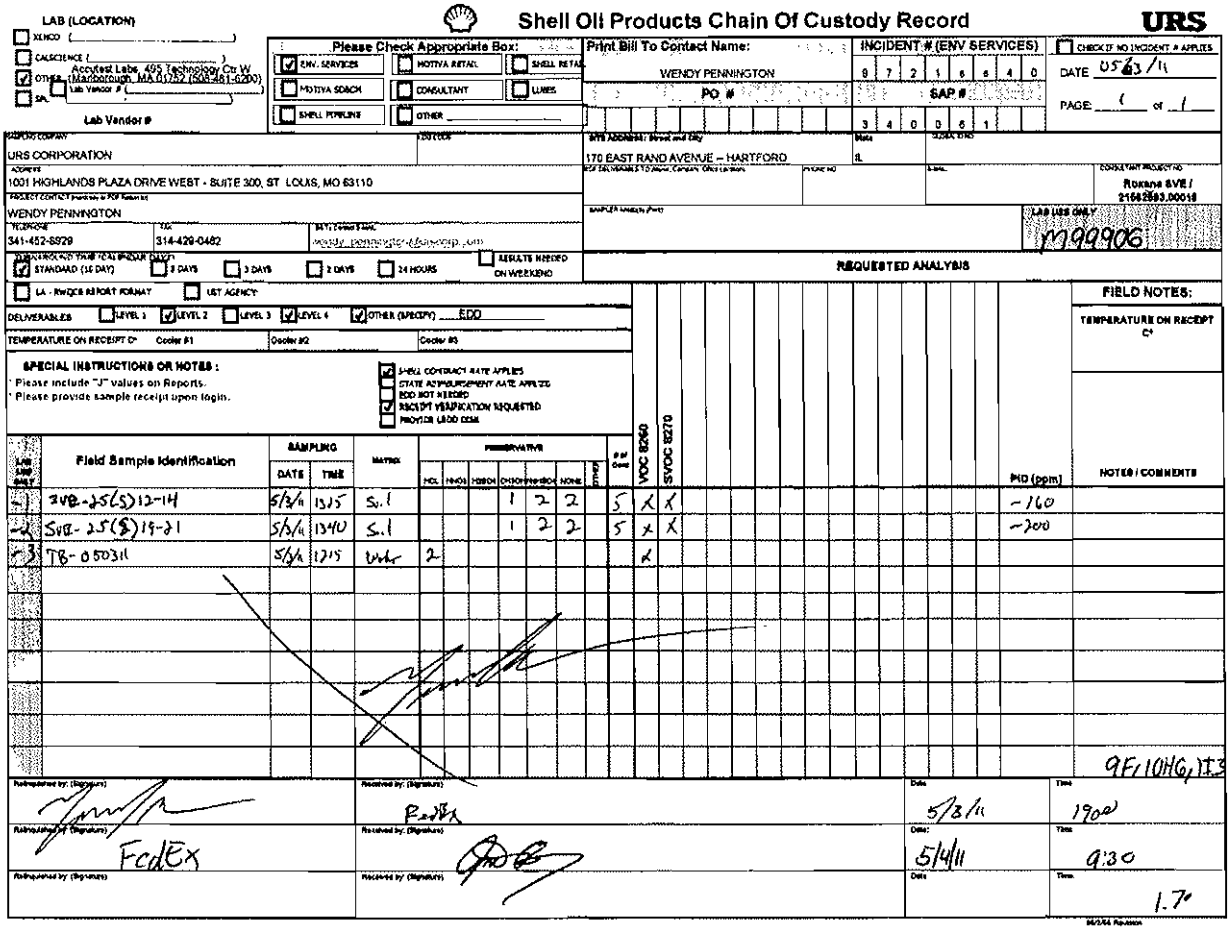
ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated valne
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



# Shell Oil Products Chain Of Custody Record

URS

LAB (LOCATION)
- [ ] XENCO ( )
- [ ] CALSCIENCE ( )
- [x] OTHER Accutest Labs, 495 Technology Ctr W (Marlborough, MA 01752 (508-481-6200))
- [ ] SPL Lab Vendor # ( )

Lab Vendor #

Please Check Appropriate Box:
- [x] ENV. SERVICES
- [ ] MOTIVA RETAIL
- [ ] SHELL RETAIL
- [ ] MOTIVA SDBCH
- [ ] CONSULTANT
- [ ] LUBES
- [ ] SHELL PIPELINE
- [ ] OTHER

Print Bill To Contact Name: WENDY PENNINGTON

PO #

INCIDENT # (ENV SERVICES): 9 7 2 1 6 6 4 0

SAP #: 3 4 0 0 6 1

- [ ] CHECK IF NO INCIDENT # APPLIES

DATE 05/03/11

PAGE 1 of 1

SAMPLING COMPANY: URS CORPORATION

ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST LOUIS, MO 63110

PROJECT CONTACT (Invoice or PDF Reports): WENDY PENNINGTON

TELEPHONE: 341-452-8929 | FAX: 314-429-0482 | BATCH Email Email: wendy.pennington@urscorp.com

SITE ADDRESS: Street and City: 170 EAST RAND AVENUE – HARTFORD | State: IL | SUBMITTED

PDF DELIVERABLES TO (Name, Company, Office Location) | PHONE NO | E-MAIL

CONSULTANT PROJECT NO: Roxane SVE / 21562593.00018

SAMPLER NAME(S) (Print)

LAB USE ONLY: M99906

TURNAROUND TIME (CALENDAR DAY)
- [x] STANDARD (10 DAY)
- [ ] 2 DAYS
- [ ] 3 DAYS
- [ ] 2 DAYS
- [ ] 24 HOURS
- [ ] RESULTS NEEDED ON WEEKEND

- [ ] LA - RWQCB REPORT FORMAT
- [ ] UST AGENCY

DELIVERABLES: [ ] LEVEL 1 [x] LEVEL 2 [ ] LEVEL 3 [x] LEVEL 4 [x] OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C°: Cooler #1 | Cooler #2 | Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
* Please include "J" values on Reports.
* Please provide sample receipt upon login.

- [x] SHELL CONTRACT RATE APPLIES
- [ ] STATE REIMBURSEMENT RATE APPLIES
- [ ] EDD NOT NEEDED
- [x] RECEIPT VERIFICATION REQUESTED
- [ ] PROVIDE LEDD DISK

REQUESTED ANALYSIS

FIELD NOTES:

TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE HCL | HNO3 | H2SO4 | CH3OH | NH4SO4 | NONE | OTHER | # of Cont | VOC 8260 | SVOC 8270 | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | SVE-25(S)12-14 | 5/3/11 | 1325 | Soil | | | | 1 | 2 | 2 | | 5 | X | X | -160 | |
| -2 | SVE-25(S)19-21 | 5/3/11 | 1340 | Soil | | | | 1 | 2 | 2 | | 5 | X | X | -200 | |
| -3 | TB-050311 | 5/3/11 | 1215 | Water | 2 | | | | | | | | X | | | |

9F, 10HG, 1I3

| Relinquished by: (Signature) | Received by: (Signature) | Date | Time |
|---|---|---|---|
| [signature] | FedEx | 5/3/11 | 1900 |
| FedEx | [signature] | 5/4/11 | 9:30 |
| | | | 1.7° |

06/2/04 Revision

M99906: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: M99906 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 5/4/2011 Delivery Method: Client Service Action Required at Login: No

Project: 170 EAST RAND AVE HARTFORD No. Coolers: 1 Airbill #'s: N/A

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2. Custody Seals Intact: | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification | Infared gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservatio | Y or N | N/A |
|---|---|---|
| 1. Trip Blank present / cooler: | ☑ ☐ | ☐ |
| 2. Trip Blank listed on COC: | ☑ ☐ | ☐ |
| 3. Samples preserved properly: | ☑ ☐ | |
| 4. VOCs headspace free: | ☑ ☐ | ☐ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles: | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree: | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1. Sample recvd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3. Condition of sample: | Intact |

| Sample Integrity - Instructions | Y or N | N/A |
|---|---|---|
| 1. Analysis requested is clear: | ☑ ☐ | |
| 2. Bottles received for unspecified tests | ☐ ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ ☐ | |
| 4. Compositing instructions clear: | ☐ ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ ☐ | ☑ |

Comments

Accutest Laboratories
V:508 481 6200
495 Technology Center West, Bldg One
F: 508.481 7753
Marlborough, MA
www.accutest.com

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4

**M99906: Chain of Custody**
**Page 2 of 2**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: M99906

URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| M99906-1 | Collected: 03-MAY-11 13:25 By: | | Received: 04-MAY-11 By: JB | | | |
| SVE-25(S) 12-14 | | | | | | |
| M99906-1 | SM21 2540 B MOD. | 05-MAY-11 | CF | | | %SOL |
| M99906-1 | SW846 8260B | 07-MAY-11 13:32 | AMY | | | V8260SL |
| M99906-1 | SW846 8270C | 12-MAY-11 17:22 | KR | 09-MAY-11 | AJ | AB8270SL |
| M99906-2 | Collected: 03-MAY-11 13:40 By: | | Received: 04-MAY-11 By: JB | | | |
| SVE-25(S) 19-21 | | | | | | |
| M99906-2 | SM21 2540 B MOD. | 05-MAY-11 | CF | | | %SOL |
| M99906-2 | SW846 8260B | 07-MAY-11 14:00 | AMY | | | V8260SL |
| M99906-2 | SW846 8270C | 12-MAY-11 17:55 | KR | 09-MAY-11 | AJ | AB8270SL |
| M99906-3 | Collected: 03-MAY-11 00:00 By: | | Received: 04-MAY-11 By: JB | | | |
| TB-050311 | | | | | | |
| M99906-3 | SW846 8260B | 17-MAY-11 21:20 | TD | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL
Received: 05/04/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| M99906-1.1 | Walk In Ref #9 | Crystall Woodruff | 05/05/11 16:09 | Retrieve from Storage |
| M99906-1.1 | Crystall Woodruff | Walk In Ref #9 | 05/05/11 16:44 | Return to Storage |
| M99906-1.1 | Walk In Ref #9 | Bijan Jafari | 05/09/11 10:16 | Retrieve from Storage |
| M99906-1.1 | Bijan Jafari | Walk In Ref #9 | 05/09/11 13:23 | Return to Storage |
| M99906-1.3 | VOC Ref #10 | Amy Min Yang | 05/07/11 11:08 | Retrieve from Storage |
| M99906-1.3 | Amy Min Yang | GCMSP | 05/07/11 11:08 | Load on Instrument |
| M99906-1.3 | GCMSP | Amy Min Yang | 05/09/11 08:31 | Unload from Instrument |
| M99906-1.3 | Amy Min Yang | VOC Ref #10 | 05/09/11 08:31 | Return to Storage |
| M99906-1.5 | VOC Ref #10 | Gary Krasinski | 05/05/11 13:18 | Retrieve from Storage |
| M99906-1.5 | Gary Krasinski | VOC Ref #10 | 05/06/11 09:50 | Return to Storage |
| M99906-2.1 | Walk In Ref #9 | Crystall Woodruff | 05/05/11 16:09 | Retrieve from Storage |
| M99906-2.1 | Crystall Woodruff | Walk In Ref #9 | 05/05/11 16:44 | Return to Storage |
| M99906-2.1 | Walk In Ref #9 | Bijan Jafari | 05/09/11 10:16 | Retrieve from Storage |
| M99906-2.1 | Bijan Jafari | Walk In Ref #9 | 05/09/11 13:23 | Return to Storage |
| M99906-2.3 | VOC Ref #10 | Amy Min Yang | 05/07/11 11:08 | Retrieve from Storage |
| M99906-2.3 | Amy Min Yang | GCMSP | 05/07/11 11:08 | Load on Instrument |
| M99906-2.3 | GCMSP | Amy Min Yang | 05/09/11 08:31 | Unload from Instrument |
| M99906-2.3 | Amy Min Yang | VOC Ref #10 | 05/09/11 08:31 | Return to Storage |
| M99906-2.5 | VOC Ref #10 | Gary Krasinski | 05/05/11 13:18 | Retrieve from Storage |
| M99906-2.5 | Gary Krasinski | VOC Ref #10 | 05/06/11 09:50 | Return to Storage |
| M99906-3.2 | VOC Ref #1 | Tamis Dudo | 05/17/11 17:01 | Retrieve from Storage |
| M99906-3.2 | Tamis Dudo | GCMSR | 05/17/11 17:01 | Load on Instrument |
| M99906-3.2 | GCMSR | Tamis Dudo | 05/18/11 08:39 | Unload from Instrument |
| M99906-3.2 | Tamis Dudo | VOC Ref #1 | 05/19/11 15:49 | Return to Storage |

New England ACCUTEST LABORATORIES



# QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1753-MB | P52908.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |



The QC reported here applies to the following samples: Method: SW846 8260B

M99906-1, M99906-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 5.0 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 0.79 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.11 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.15 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.48 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.19 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 1.0 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.35 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.5 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.42 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.36 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.23 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.19 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 0.19 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 0.22 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.32 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.16 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 0.13 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.19 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.22 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 0.71 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 1.0 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.15 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.31 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.30 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.29 | ug/kg | |
| 75-71-8 | Dichlorodiflnoromethane | ND | 2.0 | 0.20 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.17 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 0.12 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.14 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.19 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.17 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.11 | ug/kg | |

# Method Blank Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1753-MB | P52908.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |



The QC reported here applies to the following samples: Method: SW846 8260B

M99906-1, M99906-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.20 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.21 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 0.50 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 7.7 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.13 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.11 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 0.72 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 0.86 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.25 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.39 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.13 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 1.0 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 1.0 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.17 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.50 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.28 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.16 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.17 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 0.77 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 0.51 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.13 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.13 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.21 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.15 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.17 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.26 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.22 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 2.7 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 0.27 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.35 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.13 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.13 | ug/kg | |

# Method Blank Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1753-MB | P52908.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |



The QC reported here applies to the following samples: Method: SW846 8260B

M99906-1, M99906-2

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 114% | 70-130% |
| 2037-26-5 | Toluene-D8 | 116% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 115% | 70-130% |

# Method Blank Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSR804-MB | R21841.D | 1 | 05/17/11 | TD | n/a | n/a | MSR804 |



The QC reported here applies to the following samples: Method: SW846 8260B

M99906-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.6 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 3.0 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.35 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.52 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.91 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.62 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.73 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.95 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.1 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 0.49 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.37 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.53 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.35 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.42 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.61 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.76 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 0.83 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.72 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.81 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.58 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.67 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.3 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.86 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.76 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.74 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.77 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.81 | ng/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.61 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.63 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.70 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.66 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.74 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.83 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.73 | ug/l | |

# Method Blank Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSR804-MB | R21841.D | 1 | 05/17/11 | TD | n/a | n/a | MSR804 |



The QC reported here applies to the following samples: Method: SW846 8260B

M99906-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.44 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.34 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.23 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.23 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 18 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.90 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.61 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 0.56 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 2.5 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.51 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.45 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.54 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 1.3 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.94 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.75 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 0.37 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.43 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.68 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.64 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.89 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.39 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.74 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 0.57 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.35 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.72 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.49 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.47 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.61 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.62 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.51 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 0.51 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.86 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.62 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.56 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.56 | ug/l | |

# Method Blank Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSR804-MB | R21841.D | 1 | 05/17/11 | TD | n/a | n/a | MSR804 |



The QC reported here applies to the following samples: Method: SW846 8260B

M99906-3

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 94% | 70-130% |
| 2037-26-5 | Toluene-D8 | 85% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 78% | 70-130% |

# Blank Spike Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1753-BS | P52906.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |



The QC reported here applies to the following samples: Method: SW846 8260B

M99906-1, M99906-2

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 45.0 | 90 | 70-130 |
| 107-02-8 | Acrolein | 250 | 1080 | 432* [a] | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 52.4 | 105 | 70-130 |
| 71-43-2 | Benzene | 50 | 50.9 | 102 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 51.1 | 102 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 53.4 | 107 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 52.3 | 105 | 70-130 |
| 75-25-2 | Bromoform | 50 | 50.6 | 101 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 44.5 | 89 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 40.7 | 81 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 53.9 | 108 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 54.9 | 110 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 53.7 | 107 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 47.6 | 95 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 49.6 | 99 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 50.3 | 101 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 50.8 | 102 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 55.1 | 110 | 10-160 |
| 67-66-3 | Chloroform | 50 | 48.8 | 98 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 48.8 | 98 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 51.1 | 102 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 55.1 | 110 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 53.6 | 107 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 51.5 | 103 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 51.2 | 102 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 52.2 | 104 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 51.8 | 104 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 51.2 | 102 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 36.6 | 73 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 48.8 | 98 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 48.0 | 96 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 49.7 | 99 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 49.5 | 99 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 49.7 | 99 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 49.1 | 98 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 51.5 | 103 | 70-130 |

# Blank Spike Summary

Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1753-BS | P52906.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |



The QC reported here applies to the following samples: Method: SW846 8260B

M99906-1, M99906-2

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 57.7 | 115 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 50.9 | 102 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 51.7 | 103 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 59.3 | 119 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 268 | 107 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 51.3 | 103 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 51.5 | 103 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 49.9 | 100 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 41.6 | 83 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 62.2 | 124 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 54.3 | 109 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 53.9 | 108 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 49.3 | 99 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 52.1 | 104 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 46.0 | 92 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 58.3 | 117 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 54.1 | 108 | 70-130 |
| 100-42-5 | Styrene | 50 | 56.3 | 113 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 50.1 | 100 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 49.9 | 100 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 49.1 | 98 | 70-130 |
| 108-88-3 | Toluene | 50 | 53.7 | 107 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 50.3 | 101 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 49.5 | 99 | 70-130 |
| 71-55-6 | 1,1,1-Tricbloroethane | 50 | 48.7 | 97 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 53.0 | 106 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 50.4 | 101 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 44.1 | 88 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 52.2 | 104 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 55.9 | 112 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 53.6 | 107 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 47.2 | 94 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 49.7 | 99 | 70-130 |
| | m,p-Xylene | 100 | 107 | 107 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 53.8 | 108 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 161 | 107 | 70-130 |

# Blank Spike Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1753-BS | P52906.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |



The QC reported here applies to the following samples: Method: SW846 8260B

M99906-1, M99906-2

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 108% | 70-130% |
| 2037-26-5 | Toluene-D8 | 116% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 106% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSR804-BS | R21838.D | 1 | 05/17/11 | TD | n/a | n/a | MSR804 |
| MSR804-BSD | R21839.D | 1 | 05/17/11 | TD | n/a | n/a | MSR804 |



The QC reported here applies to the following samples: Method: SW846 8260B

M99906-3

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 58.6 | 117 | 56.2 | 112 | 4 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 308 | 123 | 507 | 203* a | 49* a | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 281 | 562* a | 276 | 552* a | 2 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 58.2 | 116 | 56.8 | 114 | 2 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 55.2 | 110 | 54.0 | 108 | 2 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 57.4 | 115 | 56.0 | 112 | 2 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 57.7 | 115 | 57.0 | 114 | 1 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 46.6 | 93 | 45.7 | 91 | 2 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 54.3 | 109 | 52.9 | 106 | 3 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 49.9 | 100 | 49.5 | 99 | 1 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 59.6 | 119 | 58.1 | 116 | 3 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 58.6 | 117 | 57.4 | 115 | 2 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 57.4 | 115 | 56.6 | 113 | 1 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 51.5 | 103 | 48.6 | 97 | 6 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 56.0 | 112 | 54.1 | 108 | 3 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 53.4 | 107 | 52.1 | 104 | 2 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 60.1 | 120 | 59.0 | 118 | 2 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 20.5 | 41* b | 21.6 | 43* b | 5 | 70-130/25 |
| 67-66-3 | Chloroform | 50 | 60.1 | 120 | 57.6 | 115 | 4 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 54.9 | 110 | 54.3 | 109 | 1 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 57.2 | 114 | 55.6 | 111 | 3 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 58.9 | 118 | 58.1 | 116 | 1 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 48.3 | 97 | 46.6 | 93 | 4 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 52.9 | 106 | 51.6 | 103 | 2 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 52.1 | 104 | 51.0 | 102 | 2 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 55.3 | 111 | 54.8 | 110 | 1 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 57.4 | 115 | 56.6 | 113 | 1 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 57.5 | 115 | 56.9 | 114 | 1 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 46.6 | 93 | 46.9 | 94 | 1 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 60.2 | 120 | 58.2 | 116 | 3 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 57.2 | 114 | 56.6 | 113 | 1 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 57.4 | 115 | 56.2 | 112 | 2 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 56.2 | 112 | 53.8 | 108 | 4 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 55.8 | 112 | 53.8 | 108 | 4 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 59.1 | 118 | 59.0 | 118 | 0 | 70-130/25 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 53.9 | 108 | 53.2 | 106 | 1 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSR804-BS | R21838.D | 1 | 05/17/11 | TD | n/a | n/a | MSR804 |
| MSR804-BSD | R21839.D | 1 | 05/17/11 | TD | n/a | n/a | MSR804 |



The QC reported here applies to the following samples: Method: SW846 8260B

M99906-3

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 63.1 | 126 | 61.0 | 122 | 3 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 55.7 | 111 | 54.6 | 109 | 2 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 56.1 | 112 | 55.3 | 111 | 1 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 53.1 | 106 | 53.2 | 106 | 0 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 205 | 82 | 231 | 92 | 12 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 51.4 | 103 | 51.8 | 104 | 1 | 77-137/25 |
| 100-41-4 | Ethylbenzene | 50 | 56.2 | 112 | 54.2 | 108 | 4 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 59.9 | 120 | 58.3 | 117 | 3 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 45.7 | 91 | 45.3 | 91 | 1 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 67.9 | 136* b | 65.8 | 132* b | 3 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 61.6 | 123 | 60.3 | 121 | 2 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 52.2 | 104 | 52.0 | 104 | 0 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 51.1 | 102 | 51.3 | 103 | 0 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 55.7 | 111 | 55.3 | 111 | 1 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 59.9 | 120 | 58.7 | 117 | 2 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 49.6 | 99 | 47.0 | 94 | 5 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 60.2 | 120 | 58.6 | 117 | 3 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 54.5 | 109 | 53.3 | 107 | 2 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 56.3 | 113 | 54.0 | 108 | 4 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 54.3 | 109 | 54.0 | 108 | 1 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 52.9 | 106 | 51.7 | 103 | 2 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 58.7 | 117 | 57.6 | 115 | 2 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 52.5 | 105 | 50.3 | 101 | 4 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 55.5 | 111 | 54.3 | 109 | 2 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 56.9 | 114 | 55.7 | 111 | 2 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 54.9 | 110 | 55.6 | 111 | 1 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 56.5 | 113 | 55.5 | 111 | 2 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 53.3 | 107 | 52.4 | 105 | 2 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 47.3 | 95 | 45.5 | 91 | 4 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 58.1 | 116 | 56.7 | 113 | 2 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 57.1 | 114 | 55.8 | 112 | 2 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 50.6 | 101 | 50.4 | 101 | 0 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 62.0 | 124 | 62.6 | 125 | 1 | 70-130/25 |
| | m,p-Xylene | 100 | 115 | 115 | 111 | 111 | 4 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 57.5 | 115 | 55.5 | 111 | 4 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 172 | 115 | 167 | 111 | 3 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSR804-BS | R21838.D | 1 | 05/17/11 | TD | n/a | n/a | MSR804 |
| MSR804-BSD | R21839.D | 1 | 05/17/11 | TD | n/a | n/a | MSR804 |



The QC reported here applies to the following samples: Method: SW846 8260B

M99906-3

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 105% | 94% | 70-130% |
| 2037-26-5 | Toluene-D8 | 105% | 91% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 105% | 92% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits. Blank Spike meets program technical requirements.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC11-1MS | P52929.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |
| MC11-1MSD | P52930.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |
| MC11-1 | P52909.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |
| MC11-1 [a] | P52913.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |



The QC reported here applies to the following samples: Method: SW846 8260B

M99906-1, M99906-2

| CAS No. | Compound | MC11-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 63.0 | | 82 | 160 | 118 | 97.0 | 42* [b] | 49* [c] | 70-130/30 |
| 107-02-8 | Acrolein | ND [e] | | 410 | 608 | 148* [d] | 547 | 136* [d] | 11 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 82 | 62.3 | 76 | 85.1 | 105 | 31* [c] | 70-130/30 |
| 71-43-2 | Benzene | 3.5 | | 82 | 60.1 | 69* [b] | 60.2 | 70 | 0 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 82 | 29.1 | 35* [b] | 31.0 | 38* [b] | 6 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND [e] | | 82 | 48.2 | 59* [b] | 55.5 | 69* [b] | 14 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 82 | 54.5 | 66* [b] | 53.9 | 67* [b] | 1 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 82 | 50.8 | 62* [b] | 49.9 | 62* [b] | 2 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 82 | 52.2 | 64* [b] | 56.6 | 70 | 8 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 82 | 67.6 | 82 | 68.1 | 84 | 1 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 82 | 39.1 | 48* [b] | 48.1 | 60* [b] | 21 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 82 | 54.7 | 67* [b] | 66.7 | 83 | 20 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 82 | 67.0 | 82 | 78.0 | 97 | 15 | 70-130/30 |
| 75-15-0 | Carbon disulfide | 3.4 | | 82 | 41.8 | 47* [b] | 51.4 | 59* [b] | 21 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 82 | 68.2 | 83 | 65.9 | 82 | 3 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 82 | 28.0 | 34* [b] | 28.9 | 36* [b] | 3 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 82 | 75.8 | 92 | 76.1 | 94 | 0 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND [e] | | 82 | 60.3 | 74 | 77.1 | 96 | 24 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 82 | 62.1 | 76 | 61.7 | 76 | 1 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 82 | 76.2 | 93 | 77.2 | 96 | 1 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 82 | 39.2 | 48* [b] | 44.4 | 55* [b] | 12 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 82 | 28.1 | 34* [b] | 30.9 | 38* [b] | 9 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 82 | 56.8 | 69* [b] | 69.3 | 86 | 20 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 82 | 58.9 | 72 | 55.1 | 68* [b] | 7 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 82 | 39.5 | 48* [b] | 41.1 | 51* [b] | 4 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 82 | 23.4 | 29* [b] | 26.8 | 33* [b] | 14 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 82 | 21.6 | 26* [b] | 23.8 | 30* [b] | 10 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 82 | 17.9 | 22* [b] | 19.6 | 24* [b] | 9 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 82 | 71.6 | 87 | 64.0 | 79 | 11 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 82 | 67.2 | 82 | 65.1 | 81 | 3 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 82 | 45.7 | 56* [b] | 49.8 | 62* [b] | 9 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 82 | 72.2 | 88 | 74.7 | 93 | 3 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | 1.9 | | 82 | 48.5 | 57* [b] | 51.3 | 61* [b] | 6 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 82 | 36.6 | 45* [b] | 42.7 | 53* [b] | 15 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 82 | 59.2 | 72 | 56.1 | 70 | 5 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 82 | 53.7 | 65* [b] | 54.2 | 67* [b] | 1 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC11-1MS | P52929.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |
| MC11-1MSD | P52930.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |
| MC11-1 | P52909.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |
| MC11-1 [a] | P52913.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |



The QC reported here applies to the following samples: Method: SW846 8260B

M99906-1, M99906-2

| CAS No. | Compound | MC11-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 82 | 24.0 | 29* [b] | 26.7 | 33* [b] | 11 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 82 | 49.8 | 61* [b] | 53.6 | 66* [b] | 7 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 82 | 28.3 | 35* [b] | 31.5 | 39* [b] | 11 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 82 | 20.2 | 25* [b] | 23.3 | 29* [b] | 14 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND [e] | | 410 | 821 | 200* [b] | 773 | 192* [b] | 6 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND [e] | | 82 | 48.9 | 60 | 45.1 | 56 | 8 | 41-160/30 |
| 100-41-4 | Ethylbenzene | 0.54 | | 82 | 40.4 | 49* [b] | 42.7 | 52* [b] | 6 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 82 | 49.3 | 60* [b] | 55.9 | 69* [b] | 13 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 82 | 53.8 | 66* [b] | 53.9 | 67* [b] | 0 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 82 | 74.1 | 90 | 86.3 | 107 | 15 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 82 | 49.7 | 61* [b] | 60.2 | 75 | 19 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 82 | 86.3 | 105 | 82.9 | 103 | 4 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 82 | 91.0 | 111 | 86.9 | 108 | 5 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 82 | 39.5 | 48* [b] | 44.7 | 55* [b] | 12 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 82 | 66.8 | 81 | 68.3 | 85 | 2 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 82 | 39.0 | 48* [b] | 53.7 | 67* [b] | 32* [c] | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 82 | 43.7 | 53* [b] | 54.2 | 67* [b] | 21 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 82 | 11.5 | 14* [b] | 12.0 | 15* [b] | 4 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 82 | 65.1 | 79 | 61.9 | 77 | 5 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 82 | 91.6 | 112 | 91.7 | 114 | 0 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 82 | 49.5 | 60* [b] | 53.8 | 67* [b] | 8 | 70-130/30 |
| 108-88-3 | Toluene | 1.5 | | 82 | 45.6 | 54* [b] | 45.8 | 55* [b] | 0 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 82 | 18.8 | 23* [b] | 22.9 | 28* [b] | 20 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 82 | 29.8 | 36* [b] | 33.2 | 41* [b] | 11 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethaue | ND | | 82 | 63.5 | 77 | 59.2 | 73 | 7 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 82 | 58.9 | 72 | 54.2 | 67* [b] | 8 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 82 | 42.2 | 51* [b] | 44.9 | 56* [b] | 6 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 82 | 74.6 | 91 | 69.9 | 87 | 7 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 82 | 77.1 | 94 | 77.6 | 96 | 1 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 82 | 42.5 | 52* [b] | 50.6 | 63* [b] | 17 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 82 | 49.9 | 61* [b] | 60.1 | 74 | 19 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND [e] | | 82 | 30.1 | 37* [b] | 32.7 | 41* [b] | 8 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 82 | 77.6 | 95 | 78.5 | 97 | 1 | 70-130/30 |
| | m,p-Xylene | 0.83 | | 164 | 73.3 | 44* [b] | 79.1 | 49* [b] | 8 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 82 | 37.9 | 46* [b] | 39.9 | 49* [b] | 5 | 70-130/30 |
| 1330-20-7 | Xylene (total) | 1.2 [e] | | 246 | 111 | 45* [b] | 119 | 49* [b] | 7 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC11-1MS | P52929.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |
| MC11-1MSD | P52930.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |
| MC11-1 | P52909.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |
| MC11-1 [a] | P52913.D | 1 | 05/07/11 | AMY | n/a | n/a | MSP1753 |



The QC reported here applies to the following samples: Method: SW846 8260B

M99906-1, M99906-2

| CAS No. | Surrogate Recoveries | MS | MSD | MC11-1 | MC11-1 | Limits |
|---|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 120% | 124% | 128% | 134%* [f] | 70-130% |
| 2037-26-5 | Toluene-D8 | 114% | 115% | 121% | 119% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 134%* [f] | 142%* [f] | 136%* [f] | 137%* [f] | 70-130% |

(a) Confirmation run.
(b) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(c) High RPD due to possible matrix interference and/or sample non-homogeneity.
(d) Outside control limits. Associated samples are non-detect for this compound.
(e) Result is from Run #2.
(f) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| M99949-3MS | R21855.D | 5 | 05/17/11 | TD | n/a | n/a | MSR804 |
| M99949-3MSD | R21856.D | 5 | 05/17/11 | TD | n/a | n/a | MSR804 |
| M99949-3 | R21854.D | 1 | 05/17/11 | TD | n/a | n/a | MSR804 |

5.4.2

5

The QC reported here applies to the following samples: Method: SW846 8260B

M99906-3

| CAS No. | Compound | M99949-3 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 250 | 281 | 112 | 287 | 115 | 2 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 1250 | 129 | 10* [a] | 1180 | 94 | 161* [b] | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 250 | 1350 | 540* [b] | 1360 | 544* [b] | 1 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 250 | 284 | 114 | 283 | 113 | 0 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 250 | 262 | 105 | 263 | 105 | 0 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 250 | 285 | 114 | 281 | 112 | 1 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 250 | 277 | 111 | 278 | 111 | 0 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 250 | 208 | 83 | 208 | 83 | 0 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 250 | 263 | 105 | 261 | 104 | 1 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 250 | 248 | 99 | 260 | 104 | 5 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 250 | 278 | 111 | 278 | 111 | 0 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 250 | 275 | 110 | 277 | 111 | 1 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 250 | 270 | 108 | 272 | 109 | 1 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 250 | 233 | 93 | 232 | 93 | 0 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 250 | 281 | 112 | 278 | 111 | 1 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 250 | 256 | 102 | 258 | 103 | 1 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 250 | 295 | 118 | 293 | 117 | 1 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 250 | ND | 0* [a] | ND | 0* [a] | nc | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 250 | 300 | 120 | 297 | 119 | 1 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 250 | 268 | 107 | 274 | 110 | 2 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 250 | 271 | 108 | 271 | 108 | 0 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 250 | 279 | 112 | 280 | 112 | 0 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 250 | 231 | 92 | 227 | 91 | 2 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 250 | 242 | 97 | 245 | 98 | 1 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 250 | 253 | 101 | 254 | 102 | 0 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 250 | 264 | 106 | 265 | 106 | 0 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 250 | 271 | 108 | 272 | 109 | 0 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 250 | 276 | 110 | 275 | 110 | 0 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 250 | 233 | 93 | 233 | 93 | 0 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 250 | 300 | 120 | 299 | 120 | 0 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 250 | 282 | 113 | 283 | 113 | 0 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 250 | 281 | 112 | 283 | 113 | 1 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 250 | 276 | 110 | 275 | 110 | 0 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 250 | 274 | 110 | 271 | 108 | 1 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 250 | 293 | 117 | 292 | 117 | 0 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 250 | 263 | 105 | 264 | 106 | 0 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| M99949-3MS | R21855.D | 5 | 05/17/11 | TD | n/a | n/a | MSR804 |
| M99949-3MSD | R21856.D | 5 | 05/17/11 | TD | n/a | n/a | MSR804 |
| M99949-3 | R21854.D | 1 | 05/17/11 | TD | n/a | n/a | MSR804 |



The QC reported here applies to the following samples: Method: SW846 8260B

M99906-3

| CAS No. | Compound | M99949-3 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 250 | 296 | 118 | 292 | 117 | 1 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 250 | 271 | 108 | 274 | 110 | 1 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 250 | 266 | 106 | 270 | 108 | 1 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 250 | 248 | 99 | 255 | 102 | 3 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 1250 | 612 | 49* [a] | 931 | 74 | 41* [c] | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 250 | 255 | 102 | 252 | 101 | 1 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 250 | 270 | 108 | 271 | 108 | 0 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 250 | 267 | 107 | 275 | 110 | 3 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 250 | 218 | 87 | 223 | 89 | 2 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 250 | 319 | 128 | 321 | 128 | 1 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 250 | 289 | 116 | 291 | 116 | 1 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 250 | 258 | 103 | 256 | 102 | 1 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 250 | 256 | 102 | 255 | 102 | 0 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 250 | 275 | 110 | 274 | 110 | 0 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 250 | 325 | 130 | 321 | 128 | 1 | 70-130/30 |
| 91-20-3 | Naphthalene | 1.2 | J | 250 | 224 | 89 | 233 | 93 | 4 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 250 | 284 | 114 | 285 | 114 | 0 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 250 | 248 | 99 | 247 | 99 | 0 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 250 | 274 | 110 | 272 | 109 | 1 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 250 | 267 | 107 | 266 | 106 | 0 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 250 | 252 | 101 | 254 | 102 | 1 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 250 | 284 | 114 | 286 | 114 | 1 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 250 | 235 | 94 | 248 | 99 | 5 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 250 | 254 | 102 | 260 | 104 | 2 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 250 | 287 | 115 | 285 | 114 | 1 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 250 | 275 | 110 | 277 | 111 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 250 | 277 | 111 | 280 | 112 | 1 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 250 | 270 | 108 | 266 | 106 | 1 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 250 | 215 | 86 | 219 | 88 | 2 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 250 | 270 | 108 | 270 | 108 | 0 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 250 | 269 | 108 | 270 | 108 | 0 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 250 | 244 | 98 | 248 | 99 | 2 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 250 | 320 | 128 | 311 | 124 | 3 | 70-130/30 |
| | m,p-Xylene | ND | | 500 | 551 | 110 | 551 | 110 | 0 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 250 | 279 | 112 | 276 | 110 | 1 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 750 | 830 | 111 | 827 | 110 | 0 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| M99949-3MS | R21855.D | 5 | 05/17/11 | TD | n/a | n/a | MSR804 |
| M99949-3MSD | R21856.D | 5 | 05/17/11 | TD | n/a | n/a | MSR804 |
| M99949-3 | R21854.D | 1 | 05/17/11 | TD | n/a | n/a | MSR804 |



The QC reported here applies to the following samples: Method: SW846 8260B

M99906-3

| CAS No. | Surrogate Recoveries | MS | MSD | M99949-3 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 95% | 94% | 99% | 70-130% |
| 2037-26-5 | Toluene-D8 | 89% | 90% | 87% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 85% | 87% | 79% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.
(c) High RPD due to possible matrix interference and/or sample non-homogeneity.

# Volatile Internal Standard Area Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSP1753-CC1750 | Injection Date: | 05/07/11 |
| Lab File ID: | P52905.D | Injection Time: | 07:50 |
| Instrument ID: | GCMSP | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 90614 | 8.51 | 136700 | 9.36 | 67889 | 12.58 | 61597 | 15.13 | 26379 | 6.21 |
| Upper Limit [a] | 181228 | 9.01 | 273400 | 9.86 | 135778 | 13.08 | 123194 | 15.63 | 52758 | 6.71 |
| Lower Limit [b] | 45307 | 8.01 | 68350 | 8.86 | 33945 | 12.08 | 30799 | 14.63 | 13190 | 5.71 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSP1753-BS | 89093 | 8.50 | 133702 | 9.36 | 67536 | 12.58 | 60306 | 15.13 | 29815 | 6.20 |
| MSP1753-MB | 75466 | 8.51 | 110383 | 9.37 | 49717 | 12.58 | 37432 | 15.14 | 26021 | 6.23 |
| MC11-1 | 66259 | 8.51 | 95028 | 9.36 | 34485 | 12.58 | 18751[c] | 15.14 | 34166 | 6.26 |
| ZZZZZZ | 70418 | 8.51 | 103671 | 9.37 | 40174 | 12.58 | 22906[c] | 15.14 | 40830 | 6.23 |
| ZZZZZZ | 67671 | 8.51 | 96734 | 9.37 | 37485 | 12.58 | 20892[c] | 15.14 | 31339 | 6.23 |
| ZZZZZZ | 71064 | 8.51 | 103013 | 9.37 | 42616 | 12.58 | 26020[c] | 15.14 | 35443 | 6.23 |
| MC11-1 | 62146 | 8.51 | 91631 | 9.37 | 33778[c] | 12.58 | 18310[c] | 15.14 | 33785 | 6.24 |
| ZZZZZZ | 67900 | 8.51 | 100645 | 9.37 | 38368 | 12.58 | 20437[c] | 15.14 | 37934 | 6.24 |
| ZZZZZZ | 64997 | 8.51 | 92181 | 9.37 | 33724[c] | 12.58 | 16722[c] | 15.14 | 36493 | 6.22 |
| ZZZZZZ | 66238 | 8.51 | 94006 | 9.37 | 36331 | 12.58 | 20582[c] | 15.14 | 37900 | 6.23 |
| M99906-1 | 77095 | 8.51 | 115337 | 9.37 | 53471 | 12.58 | 40266 | 15.14 | 36448 | 6.23 |
| M99906-2 | 74895 | 8.51 | 112398 | 9.37 | 49967 | 12.58 | 39663 | 15.14 | 33074 | 6.22 |
| ZZZZZZ | 67555 | 8.51 | 97721 | 9.37 | 42040 | 12.58 | 28777[c] | 15.14 | 16688 | 6.28 |
| ZZZZZZ | 64500 | 8.52 | 94379 | 9.37 | 40756 | 12.58 | 26530[c] | 15.14 | 15564 | 6.27 |
| ZZZZZZ | 63691 | 8.51 | 93379 | 9.37 | 43014 | 12.58 | 28819[c] | 15.14 | 18255 | 6.24 |
| ZZZZZZ | 2378[c] | 8.52 | 3433[c] | 9.38 | 1305[c] | 12.59 | 376[c] | 15.15 | 0[c] | 0.00* |
| ZZZZZZ | 61664 | 8.51 | 91068 | 9.37 | 40340 | 12.58 | 26810[c] | 15.14 | 16779 | 6.25 |
| ZZZZZZ | 64167 | 8.51 | 94195 | 9.37 | 42325 | 12.58 | 28846[c] | 15.14 | 16765 | 6.24 |
| ZZZZZZ | 64984 | 8.52 | 95372 | 9.37 | 43831 | 12.58 | 31360 | 15.14 | 14041 | 6.25 |
| ZZZZZZ | 65106 | 8.51 | 96423 | 9.37 | 43650 | 12.58 | 31348 | 15.14 | 14606 | 6.25 |
| MC11-1MS | 72649 | 8.51 | 110814 | 9.37 | 46230 | 12.58 | 27785[c] | 15.14 | 34029 | 6.20 |
| MC11-1MSD | 70256 | 8.51 | 107391 | 9.36 | 44889 | 12.58 | 25337[c] | 15.14 | 39587 | 6.21 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Volatile Internal Standard Area Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSR804-CC770 | Injection Date: | 05/17/11 |
| Lab File ID: | R21837.D | Injection Time: | 10:24 |
| Instrument ID: | GCMSR | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 157885 | 9.08 | 255903 | 9.95 | 138274 | 13.21 | 139139 | 15.77 | 35605 | 6.65 |
| Upper Limit [a] | 315770 | 9.58 | 511806 | 10.45 | 276548 | 13.71 | 278278 | 16.27 | 71210 | 7.15 |
| Lower Limit [b] | 78943 | 8.58 | 127952 | 9.45 | 69137 | 12.71 | 69570 | 15.27 | 17803 | 6.15 |

| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| MSR804-BS | 157206 | 9.08 | 255513 | 9.95 | 136433 | 13.21 | 134111 | 15.77 | 35841 | 6.65 |
| MSR804-BSD | 157769 | 9.08 | 254833 | 9.95 | 139255 | 13.21 | 136556 | 15.77 | 36287 | 6.64 |
| MSR804-MB | 144290 | 9.08 | 230916 | 9.95 | 117991 | 13.21 | 115042 | 15.77 | 32133 | 6.65 |
| ZZZZZZ | 134961 | 9.08 | 215773 | 9.95 | 111338 | 13.21 | 107709 | 15.77 | 31862 | 6.65 |
| ZZZZZZ | 131252 | 9.08 | 209741 | 9.95 | 107083 | 13.21 | 105514 | 15.77 | 32089 | 6.65 |
| ZZZZZZ | 127763 | 9.08 | 205530 | 9.95 | 107669 | 13.21 | 102750 | 15.77 | 27003 | 6.65 |
| ZZZZZZ | 125136 | 9.08 | 196796 | 9.95 | 103871 | 13.21 | 101188 | 15.77 | 23374 | 6.66 |
| ZZZZZZ | 118279 | 9.08 | 190894 | 9.95 | 103046 | 13.21 | 97198 | 15.77 | 22564 | 6.66 |
| ZZZZZZ | 117042 | 9.08 | 190693 | 9.95 | 103381 | 13.21 | 108591 | 15.77 | 22573 | 6.65 |
| ZZZZZZ | 125903 | 9.08 | 206271 | 9.95 | 109185 | 13.21 | 110371 | 15.77 | 25019 | 6.65 |
| ZZZZZZ | 147470 | 9.08 | 229683 | 9.95 | 123353 | 13.21 | 126987 | 15.77 | 28220 | 6.65 |
| ZZZZZZ | 156658 | 9.08 | 245711 | 9.95 | 126408 | 13.21 | 127944 | 15.77 | 30828 | 6.65 |
| ZZZZZZ | 152886 | 9.08 | 236287 | 9.95 | 123521 | 13.21 | 130351 | 15.77 | 33142 | 6.65 |
| ZZZZZZ | 155878 | 9.08 | 244378 | 9.95 | 125455 | 13.21 | 130218 | 15.77 | 30992 | 6.65 |
| ZZZZZZ | 159276 | 9.08 | 246309 | 9.95 | 124515 | 13.21 | 129775 | 15.77 | 29387 | 6.66 |
| M99949-3 | 140004 | 9.08 | 225165 | 9.95 | 117789 | 13.21 | 116929 | 15.77 | 27307 | 6.66 |
| M99949-3MS | 153613 | 9.08 | 248290 | 9.95 | 135770 | 13.21 | 136831 | 15.77 | 29765 | 6.65 |
| M99949-3MSD | 158883 | 9.08 | 256524 | 9.95 | 139271 | 13.21 | 139524 | 15.77 | 33403 | 6.65 |
| ZZZZZZ | 143698 | 9.08 | 228844 | 9.95 | 118391 | 13.21 | 117939 | 15.77 | 33544 | 6.65 |
| ZZZZZZ | 137432 | 9.08 | 219160 | 9.95 | 113930 | 13.21 | 110674 | 15.77 | 32552 | 6.65 |
| ZZZZZZ | 130773 | 9.08 | 210206 | 9.95 | 109567 | 13.21 | 106377 | 15.77 | 30691 | 6.65 |
| M99906-3 | 129598 | 9.08 | 209696 | 9.95 | 108692 | 13.21 | 104579 | 15.77 | 29330 | 6.65 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Surrogate Recovery Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| M99906-3 | R21860.D | 102.0 | 86.0 | 77.0 |
| M99949-3MS | R21855.D | 95.0 | 89.0 | 85.0 |
| M99949-3MSD | R21856.D | 94.0 | 90.0 | 87.0 |
| MSR804-BS | R21838.D | 105.0 | 105.0 | 105.0 |
| MSR804-BSD | R21839.D | 94.0 | 91.0 | 92.0 |
| MSR804-MB | R21841.D | 94.0 | 85.0 | 78.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| M99906-1 | P52917.D | 111.0 | 117.0 | 113.0 |
| M99906-2 | P52918.D | 117.0 | 117.0 | 112.0 |
| MC11-1MS | P52929.D | 120.0 | 114.0 | 134.0* [a] |
| MC11-1MSD | P52930.D | 124.0 | 115.0 | 142.0* [a] |
| MSP1753-BS | P52906.D | 108.0 | 116.0 | 106.0 |
| MSP1753-MB | P52908.D | 114.0 | 116.0 | 115.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

(a) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

5.6.2

New England ACCUTEST LABORATORIES

## GC/MS Semi-volatiles



# QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24854-MB | I72401.D | 1 | 05/11/11 | KR | 05/09/11 | OP24854 | MSI2596 |

The QC reported here applies to the following samples: Method: SW846 8270C

M99906-1, M99906-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | ND | 500 | 39 | ug/kg | |
| 95-57-8 | 2-Chlorophenol | ND | 250 | 13 | ug/kg | |
| 59-50-7 | 4-Chloro-3-methyl phenol | ND | 500 | 17 | ug/kg | |
| 120-83-2 | 2,4-Dichlorophenol | ND | 500 | 29 | ug/kg | |
| 105-67-9 | 2,4-Dimethylphenol | ND | 500 | 50 | ug/kg | |
| 51-28-5 | 2,4-Dinitrophenol | ND | 990 | 250 | ug/kg | |
| 534-52-1 | 4,6-Dinitro-o-cresol | ND | 500 | 250 | ug/kg | |
| 95-48-7 | 2-Methylphenol | ND | 500 | 14 | ug/kg | |
| | 3&4-Methylphenol | ND | 500 | 26 | ug/kg | |
| 88-75-5 | 2-Nitrophenol | ND | 500 | 30 | ug/kg | |
| 100-02-7 | 4-Nitrophenol | ND | 990 | 250 | ug/kg | |
| 87-86-5 | Pentachlorophenol | ND | 500 | 46 | ug/kg | |
| 108-95-2 | Phenol | ND | 250 | 41 | ug/kg | |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | 500 | 37 | ug/kg | |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | 500 | 34 | ug/kg | |
| 83-32-9 | Acenaphthene | ND | 250 | 21 | ug/kg | |
| 208-96-8 | Acenaphthylene | ND | 250 | 19 | ug/kg | |
| 62-53-3 | Aniline | ND | 500 | 500 | ug/kg | |
| 120-12-7 | Anthracene | ND | 250 | 20 | ug/kg | |
| 56-55-3 | Benzo(a)anthracene | ND | 250 | 9.1 | ug/kg | |
| 50-32-8 | Benzo(a)pyrene | ND | 250 | 15 | ug/kg | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 250 | 29 | ug/kg | |
| 191-24-2 | Benzo(g,h,i)perylene | ND | 250 | 16 | ug/kg | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 250 | 7.3 | ug/kg | |
| 101-55-3 | 4-Bromophenyl phenyl ether | ND | 250 | 20 | ug/kg | |
| 85-68-7 | Butyl benzyl phthalate | ND | 250 | 11 | ug/kg | |
| 100-51-6 | Benzyl Alcohol | ND | 500 | 30 | ug/kg | |
| 91-58-7 | 2-Chloronaphthalene | ND | 250 | 21 | ug/kg | |
| 106-47-8 | 4-Chloroaniline | ND | 500 | 120 | ug/kg | |
| 218-01-9 | Chrysene | ND | 250 | 8.1 | ug/kg | |
| 111-91-1 | bis(2-Chloroethoxy)methane | ND | 250 | 19 | ug/kg | |
| 111-44-4 | bis(2-Chloroethyl)ether | ND | 250 | 5.3 | ug/kg | |
| 108-60-1 | bis(2-Chloroisopropyl)ether | ND | 250 | 24 | ug/kg | |
| 7005-72-3 | 4-Chlorophenyl phenyl ether | ND | 250 | 22 | ug/kg | |
| 122-66-7 | 1,2-Diphenylhydrazine | ND | 250 | 21 | ug/kg | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | 500 | 120 | ug/kg | |

# Method Blank Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24854-MB | I72401.D | 1 | 05/11/11 | KR | 05/09/11 | OP24854 | MSI2596 |

The QC reported here applies to the following samples: Method: SW846 8270C

M99906-1, M99906-2



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | ND | 500 | 24 | ug/kg | |
| 91-94-1 | 3,3'-Dichlorobenzidine | ND | 250 | 5.9 | ug/kg | |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | 250 | 16 | ug/kg | |
| 132-64-9 | Dibenzofuran | ND | 250 | 21 | ug/kg | |
| 84-74-2 | Di-n-butyl phthalate | ND | 250 | 23 | ug/kg | |
| 117-84-0 | Di-n-octyl phthalate | ND | 250 | 13 | ug/kg | |
| 84-66-2 | Diethyl phthalate | ND | 250 | 22 | ug/kg | |
| 131-11-3 | Dimethyl phthalate | ND | 250 | 17 | ug/kg | |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | ND | 250 | 17 | ug/kg | |
| 206-44-0 | Fluoranthene | ND | 250 | 8.4 | ug/kg | |
| 86-73-7 | Fluorene | ND | 250 | 5.5 | ug/kg | |
| 118-74-1 | Hexachlorobenzene | ND | 250 | 21 | ug/kg | |
| 77-47-4 | Hexachlorocyclopentadiene | ND | 500 | 3.3 | ug/kg | |
| 67-72-1 | Hexachloroethane | ND | 250 | 20 | ug/kg | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 250 | 15 | ng/kg | |
| 78-59-1 | Isophorone | ND | 250 | 25 | ug/kg | |
| 90-12-0 | 1-Methylnaphthalene | ND | 250 | 250 | ug/kg | |
| 91-57-6 | 2-Methylnaphthalene | ND | 250 | 21 | ug/kg | |
| 88-74-4 | 2-Nitroaniline | ND | 500 | 120 | ug/kg | |
| 99-09-2 | 3-Nitroaniline | ND | 500 | 120 | ug/kg | |
| 100-01-6 | 4-Nitroaniline | ND | 500 | 18 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 5.7 | ug/kg | |
| 98-95-3 | Nitrobenzene | ND | 250 | 7.3 | ug/kg | |
| 62-75-9 | n-Nitrosodimethylamine | ND | 250 | 20 | ug/kg | |
| 621-64-7 | N-Nitroso-di-n-propylamine | ND | 250 | 16 | ug/kg | |
| 86-30-6 | N-Nitrosodiphenylamine | ND | 250 | 13 | ug/kg | |
| 85-01-8 | Phenanthrene | ND | 250 | 6.4 | ug/kg | |
| 129-00-0 | Pyrene | ND | 250 | 8.0 | ug/kg | |
| 110-86-1 | Pyridine | ND | 500 | 500 | ug/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 76% | 30-130% |
| 4165-62-2 | Phenol-d5 | 72% | 30-130% |
| 118-79-6 | 2,4,6-Tribromophenol | 75% | 30-130% |

# Method Blank Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24854-MB | I72401.D | 1 | 05/11/11 | KR | 05/09/11 | OP24854 | MSI2596 |

The QC reported here applies to the following samples: Method: SW846 8270C

M99906-1, M99906-2

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 4165-60-0 | Nitrobenzene-d5 | 69% | 30-130% |
| 321-60-8 | 2-Fluorobiphenyl | 75% | 30-130% |
| 1718-51-0 | Terphenyl-d14 | 93% | 30-130% |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24854-BS | I72402.D | 1 | 05/11/11 | KR | 05/09/11 | OP24854 | MSI2596 |
| OP24854-BSD | I72403.D | 1 | 05/11/11 | KR | 05/09/11 | OP24854 | MSI2596 |



The QC reported here applies to the following samples: Method: SW846 8270C

M99906-1, M99906-2

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | 4890 | 3510 | 72 | 3380 | 70 | 4 | 30-130/30 |
| 95-57-8 | 2-Chlorophenol | 4890 | 3920 | 80 | 3740 | 78 | 5 | 30-130/30 |
| 59-50-7 | 4-Chloro-3-methyl phenol | 4890 | 3990 | 82 | 3770 | 78 | 6 | 30-130/30 |
| 120-83-2 | 2,4-Dichlorophenol | 4890 | 3740 | 76 | 3560 | 74 | 5 | 30-130/30 |
| 105-67-9 | 2,4-Dimethylphenol | 4890 | 3790 | 77 | 3460 | 72 | 9 | 30-130/30 |
| 51-28-5 | 2,4-Dinitrophenol | 4890 | 3510 | 72 | 3460 | 72 | 1 | 30-130/30 |
| 534-52-1 | 4,6-Dinitro-o-cresol | 4890 | 4410 | 90 | 4290 | 89 | 3 | 30-130/30 |
| 95-48-7 | 2-Methylphenol | 4890 | 3970 | 81 | 3750 | 78 | 6 | 30-130/30 |
| | 3&4-Methylphenol | 9780 | 10200 | 104 | 9580 | 100 | 6 | 30-130/30 |
| 88-75-5 | 2-Nitrophenol | 4890 | 3930 | 80 | 3730 | 78 | 5 | 30-130/30 |
| 100-02-7 | 4-Nitrophenol | 4890 | 4140 | 85 | 3930 | 82 | 5 | 30-130/30 |
| 87-86-5 | Pentachlorophenol | 4890 | 4750 | 97 | 4580 | 95 | 4 | 30-130/30 |
| 108-95-2 | Phenol | 4890 | 3580 | 73 | 3400 | 71 | 5 | 30-130/30 |
| 95-95-4 | 2,4,5-Trichlorophenol | 4890 | 4000 | 82 | 3820 | 79 | 5 | 30-130/30 |
| 88-06-2 | 2,4,6-Trichlorophenol | 4890 | 4040 | 83 | 3880 | 81 | 4 | 30-130/30 |
| 83-32-9 | Acenaphthene | 2450 | 1890 | 77 | 1820 | 76 | 4 | 40-140/30 |
| 208-96-8 | Acenaphthylene | 2450 | 1410 | 58 | 1360 | 57 | 4 | 40-140/30 |
| 62-53-3 | Aniline | 2450 | 1030 | 42 | 912 | 38* [a] | 12 | 40-140/30 |
| 120-12-7 | Anthracene | 2450 | 1890 | 77 | 1840 | 77 | 3 | 40-140/30 |
| 56-55-3 | Benzo(a)anthracene | 2450 | 2180 | 89 | 2120 | 88 | 3 | 40-140/30 |
| 50-32-8 | Benzo(a)pyrene | 2450 | 1850 | 76 | 1800 | 75 | 3 | 40-140/30 |
| 205-99-2 | Benzo(b)fluoranthene | 2450 | 2090 | 85 | 2020 | 84 | 3 | 40-140/30 |
| 191-24-2 | Benzo(g,h,i)perylene | 2450 | 2170 | 89 | 2170 | 90 | 0 | 40-140/30 |
| 207-08-9 | Benzo(k)fluoranthene | 2450 | 2140 | 87 | 2060 | 86 | 4 | 40-140/30 |
| 101-55-3 | 4-Bromophenyl phenyl ether | 2450 | 2080 | 85 | 2020 | 84 | 3 | 40-140/30 |
| 85-68-7 | Butyl benzyl phthalate | 2450 | 2150 | 88 | 2090 | 87 | 3 | 40-140/30 |
| 100-51-6 | Benzyl Alcohol | 2450 | 1930 | 79 | 1850 | 77 | 4 | 40-140/30 |
| 91-58-7 | 2-Chloronaphthalene | 2450 | 1930 | 79 | 1890 | 79 | 2 | 40-140/30 |
| 106-47-8 | 4-Chloroaniline | 2450 | 1370 | 56 | 1370 | 57 | 0 | 40-140/30 |
| 218-01-9 | Chrysene | 2450 | 2060 | 84 | 2000 | 83 | 3 | 40-140/30 |
| 111-91-1 | bis(2-Chloroethoxy)methane | 2450 | 1760 | 72 | 1710 | 71 | 3 | 40-140/30 |
| 111-44-4 | bis(2-Chloroethyl)ether | 2450 | 1770 | 72 | 1750 | 73 | 1 | 40-140/30 |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 2450 | 1860 | 76 | 1820 | 76 | 2 | 40-140/30 |
| 7005-72-3 | 4-Chlorophenyl phenyl ether | 2450 | 1970 | 81 | 1900 | 79 | 4 | 40-140/30 |
| 122-66-7 | 1,2-Diphenylhydrazine | 2450 | 1700 | 69 | 1650 | 69 | 3 | 40-140/30 |
| 121-14-2 | 2,4-Dinitrotoluene | 2450 | 1960 | 80 | 1900 | 79 | 3 | 40-140/30 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24854-BS | I72402.D | 1 | 05/11/11 | KR | 05/09/11 | OP24854 | MSI2596 |
| OP24854-BSD | I72403.D | 1 | 05/11/11 | KR | 05/09/11 | OP24854 | MSI2596 |

The QC reported here applies to the following samples: Method: SW846 8270C

M99906-1, M99906-2

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | BSD ug/kg | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | 2450 | 1940 | 79 | 1830 | 76 | 6 | 40-140/30 |
| 91-94-1 | 3,3'-Dichlorobenzidine | 2450 | 1580 | 65 | 1760 | 73 | 11 | 40-140/30 |
| 53-70-3 | Dibenzo(a,h)anthracene | 2450 | 2180 | 89 | 2150 | 89 | 1 | 40-140/30 |
| 132-64-9 | Dibenzofuran | 2450 | 1810 | 74 | 1780 | 74 | 2 | 40-140/30 |
| 84-74-2 | Di-n-butyl phthalate | 2450 | 2120 | 87 | 2070 | 86 | 2 | 40-140/30 |
| 117-84-0 | Di-n-octyl phthalate | 2450 | 2600 | 106 | 2490 | 104 | 4 | 40-140/30 |
| 84-66-2 | Diethyl phthalate | 2450 | 2050 | 84 | 2000 | 83 | 2 | 40-140/30 |
| 131-11-3 | Dimethyl phthalate | 2450 | 1970 | 81 | 1890 | 79 | 4 | 40-140/30 |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 2450 | 2210 | 90 | 2160 | 90 | 2 | 40-140/30 |
| 206-44-0 | Fluoranthene | 2450 | 2080 | 85 | 2020 | 84 | 3 | 40-140/30 |
| 86-73-7 | Fluorene | 2450 | 1960 | 80 | 1890 | 79 | 4 | 40-140/30 |
| 118-74-1 | Hexachlorobenzene | 2450 | 1940 | 79 | 1920 | 80 | 1 | 40-140/30 |
| 77-47-4 | Hexachlorocyclopentadiene | 2450 | 939 | 38* [a] | 939 | 39* [a] | 0 | 40-140/30 |
| 67-72-1 | Hexachloroethane | 2450 | 1880 | 77 | 1840 | 77 | 2 | 40-140/30 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 2450 | 2160 | 88 | 2170 | 90 | 0 | 40-140/30 |
| 78-59-1 | Isophorone | 2450 | 1680 | 69 | 1630 | 68 | 3 | 40-140/30 |
| 90-12-0 | 1-Methylnaphthalene | 2450 | ND | 0* [b] | ND | 0* [b] | nc | 40-140/30 |
| 91-57-6 | 2-Methylnaphthalene | 2450 | 1820 | 74 | 1750 | 73 | 4 | 40-140/30 |
| 88-74-4 | 2-Nitroaniline | 2450 | 2020 | 83 | 1940 | 81 | 4 | 40-140/30 |
| 99-09-2 | 3-Nitroaniline | 2450 | 1580 | 65 | 1610 | 67 | 2 | 40-140/30 |
| 100-01-6 | 4-Nitroaniline | 2450 | 1810 | 74 | 1710 | 71 | 6 | 40-140/30 |
| 91-20-3 | Naphthalene | 2450 | 1890 | 77 | 1820 | 76 | 4 | 40-140/30 |
| 98-95-3 | Nitrobenzene | 2450 | 1680 | 69 | 1620 | 67 | 4 | 40-140/30 |
| 62-75-9 | n-Nitrosodimethylamine | 2450 | 1670 | 68 | 1650 | 69 | 1 | 40-140/30 |
| 621-64-7 | N-Nitroso-di-n-propylamine | 2450 | 1870 | 76 | 1800 | 75 | 4 | 40-140/30 |
| 86-30-6 | N-Nitrosodiphenylamine | 2450 | 1970 | 81 | 1920 | 80 | 3 | 40-140/30 |
| 85-01-8 | Phenanthrene | 2450 | 1940 | 79 | 1890 | 79 | 3 | 40-140/30 |
| 129-00-0 | Pyrene | 2450 | 2050 | 84 | 1950 | 81 | 5 | 40-140/30 |
| 110-86-1 | Pyridine | 2450 | 1580 | 65 | 1530 | 64 | 3 | 40-140/30 |

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 81% | 79% | 30-130% |
| 4165-62-2 | Phenol-d5 | 77% | 74% | 30-130% |
| 118-79-6 | 2,4,6-Tribromophenol | 82% | 80% | 30-130% |

6.2.1

# Blank Spike/Blank Spike Duplicate Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24854-BS | I72402.D | 1 | 05/11/11 | KR | 05/09/11 | OP24854 | MSI2596 |
| OP24854-BSD | I72403.D | 1 | 05/11/11 | KR | 05/09/11 | OP24854 | MSI2596 |

The QC reported here applies to the following samples: Method: SW846 8270C

M99906-1, M99906-2

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 4165-60-0 | Nitrobenzene-d5 | 73% | 71% | 30-130% |
| 321-60-8 | 2-Fluorobiphenyl | 82% | 78% | 30-130% |
| 1718-51-0 | Terphenyl-d14 | 91% | 87% | 30-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Analyte not present in spiking solution.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24854-MS | I72404.D | 1 | 05/11/11 | KR | 05/09/11 | OP24854 | MSI2596 |
| OP24854-MSD | I72405.D | 1 | 05/11/11 | KR | 05/09/11 | OP24854 | MSI2596 |
| M99906-1 | I72440.D | 1 | 05/12/11 | KR | 05/09/11 | OP24854 | MSI2598 |

The QC reported here applies to the following samples: Method: SW846 8270C

M99906-1, M99906-2

| CAS No. | Compound | M99906-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | ND | | 5620 | 986 | 18* a | 691 | 12* a | 35* b | 30-130/30 |
| 95-57-8 | 2-Chlorophenol | ND | | 5620 | 4130 | 73 | 4020 | 70 | 3 | 30-130/30 |
| 59-50-7 | 4-Chloro-3-methyl phenol | ND | | 5620 | 4400 | 78 | 4310 | 75 | 2 | 30-130/30 |
| 120-83-2 | 2,4-Dichlorophenol | ND | | 5620 | 4060 | 72 | 4000 | 70 | 1 | 30-130/30 |
| 105-67-9 | 2,4-Dimethylphenol | ND | | 5620 | 4110 | 73 | 3980 | 69 | 3 | 30-130/30 |
| 51-28-5 | 2,4-Dinitrophenol | ND | | 5620 | 2510 | 45 | 2070 | 36 | 19 | 30-130/30 |
| 534-52-1 | 4,6-Dinitro-o-cresol | ND | | 5620 | 3860 | 69 | 4330 | 75 | 11 | 30-130/30 |
| 95-48-7 | 2-Methylphenol | ND | | 5620 | 4220 | 75 | 4160 | 72 | 1 | 30-130/30 |
| | 3&4-Methylphenol | ND | | 11200 | 10900 | 97 | 10800 | 94 | 1 | 30-130/30 |
| 88-75-5 | 2-Nitrophenol | ND | | 5620 | 3780 | 67 | 4100 | 71 | 8 | 30-130/30 |
| 100-02-7 | 4-Nitrophenol | ND | | 5620 | 4320 | 77 | 4220 | 74 | 2 | 30-130/30 |
| 87-86-5 | Pentachlorophenol | ND | | 5620 | 5260 | 94 | 4900 | 85 | 7 | 30-130/30 |
| 108-95-2 | Phenol | ND | | 5620 | 3790 | 67 | 3780 | 66 | 0 | 30-130/30 |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | | 5620 | 4310 | 77 | 4090 | 71 | 5 | 30-130/30 |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | | 5620 | 4420 | 79 | 4160 | 72 | 6 | 30-130/30 |
| 83-32-9 | Acenaphthene | ND | | 2810 | 2090 | 74 | 2010 | 70 | 4 | 40-140/30 |
| 208-96-8 | Acenaphthylene | ND | | 2810 | 1550 | 55 | 1500 | 52 | 3 | 40-140/30 |
| 62-53-3 | Aniline | ND | | 2810 | 1150 | 41 | 1000 | 35* c | 14 | 40-140/30 |
| 120-12-7 | Anthracene | ND | | 2810 | 2120 | 75 | 2000 | 70 | 6 | 40-140/30 |
| 56-55-3 | Benzo(a)anthracene | ND | | 2810 | 2440 | 87 | 2330 | 81 | 5 | 40-140/30 |
| 50-32-8 | Benzo(a)pyrene | ND | | 2810 | 2010 | 72 | 1960 | 68 | 3 | 40-140/30 |
| 205-99-2 | Benzo(b)fluoranthene | ND | | 2810 | 2260 | 80 | 2150 | 75 | 5 | 40-140/30 |
| 191-24-2 | Benzo(g,h,i)perylene | ND | | 2810 | 2450 | 87 | 2260 | 79 | 8 | 40-140/30 |
| 207-08-9 | Benzo(k)fluoranthene | ND | | 2810 | 2260 | 80 | 2130 | 74 | 6 | 40-140/30 |
| 101-55-3 | 4-Bromophenyl phenyl ether | ND | | 2810 | 2370 | 84 | 2180 | 76 | 8 | 40-140/30 |
| 85-68-7 | Butyl benzyl phthalate | ND | | 2810 | 2370 | 84 | 2270 | 79 | 4 | 40-140/30 |
| 100-51-6 | Benzyl Alcohol | ND | | 2810 | 2090 | 74 | 2040 | 71 | 2 | 40-140/30 |
| 91-58-7 | 2-Chloronaphthalene | ND | | 2810 | 2130 | 76 | 2020 | 70 | 5 | 40-140/30 |
| 106-47-8 | 4-Chloroaniline | ND | | 2810 | 1520 | 54 | 1480 | 52 | 3 | 40-140/30 |
| 218-01-9 | Chrysene | ND | | 2810 | 2270 | 81 | 2200 | 77 | 3 | 40-140/30 |
| 111-91-1 | bis(2-Chloroethoxy)methane | ND | | 2810 | 1940 | 69 | 1850 | 64 | 5 | 40-140/30 |
| 111-44-4 | bis(2-Chloroethyl)ether | ND | | 2810 | 1910 | 68 | 1820 | 63 | 5 | 40-140/30 |
| 108-60-1 | bis(2-Chloroisopropyl)ether | ND | | 2810 | 2000 | 71 | 1950 | 68 | 3 | 40-140/30 |
| 7005-72-3 | 4-Chlorophenyl phenyl ether | ND | | 2810 | 2200 | 78 | 2130 | 74 | 3 | 40-140/30 |
| 122-66-7 | 1,2-Diphenylhydrazine | ND | | 2810 | 1960 | 70 | 1840 | 64 | 6 | 40-140/30 |
| 121-14-2 | 2,4-Dinitrotoluene | ND | | 2810 | 2040 | 73 | 2140 | 75 | 5 | 40-140/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24854-MS | I72404.D | 1 | 05/11/11 | KR | 05/09/11 | OP24854 | MSI2596 |
| OP24854-MSD | I72405.D | 1 | 05/11/11 | KR | 05/09/11 | OP24854 | MSI2596 |
| M99906-1 | I72440.D | 1 | 05/12/11 | KR | 05/09/11 | OP24854 | MSI2598 |

6.3.1

9

The QC reported here applies to the following samples: Method: SW846 8270C

M99906-1, M99906-2

| CAS No. | Compound | M99906-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | ND | | 2810 | 1980 | 70 | 2060 | 72 | 4 | 40-140/30 |
| 91-94-1 | 3,3'-Dichlorobenzidine | ND | | 2810 | 2160 | 77 | 1920 | 67 | 12 | 40-140/30 |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | | 2810 | 2400 | 85 | 2250 | 78 | 6 | 40-140/30 |
| 132-64-9 | Dibenzofuran | ND | | 2810 | 2050 | 73 | 1960 | 68 | 4 | 40-140/30 |
| 84-74-2 | Di-n-butyl phthalate | ND | | 2810 | 2350 | 84 | 2270 | 79 | 3 | 40-140/30 |
| 117-84-0 | Di-n-octyl phthalate | ND | | 2810 | 2790 | 99 | 2640 | 92 | 6 | 40-140/30 |
| 84-66-2 | Diethyl phthalate | ND | | 2810 | 2330 | 83 | 2250 | 78 | 3 | 40-140/30 |
| 131-11-3 | Dimethyl phthalate | ND | | 2810 | 2220 | 79 | 2100 | 73 | 6 | 40-140/30 |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 38.4 | J | 2810 | 2540 | 89 | 2420 | 83 | 5 | 40-140/30 |
| 206-44-0 | Fluoranthene | ND | | 2810 | 2250 | 80 | 2160 | 75 | 4 | 40-140/30 |
| 86-73-7 | Fluorene | ND | | 2810 | 2190 | 78 | 2100 | 73 | 4 | 40-140/30 |
| 118-74-1 | Hexachlorobenzene | ND | | 2810 | 2260 | 80 | 2100 | 73 | 7 | 40-140/30 |
| 77-47-4 | Hexachlorocyclopentadiene | ND | | 2810 | 738 | 26* c | 829 | 29* c | 12 | 40-140/30 |
| 67-72-1 | Hexachloroethane | ND | | 2810 | 1970 | 70 | 1960 | 68 | 1 | 40-140/30 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | | 2810 | 2430 | 86 | 2260 | 79 | 7 | 40-140/30 |
| 78-59-1 | Isophorone | ND | | 2810 | 1840 | 65 | 1810 | 63 | 2 | 40-140/30 |
| 90-12-0 | 1-Methylnaphthalene | ND | | 2810 | ND | 0* d | ND | 0* d | nc | 40-140/30 |
| 91-57-6 | 2-Methylnaphthalene | ND | | 2810 | 2010 | 72 | 1980 | 69 | 2 | 40-140/30 |
| 88-74-4 | 2-Nitroaniline | ND | | 2810 | 2210 | 79 | 2190 | 76 | 1 | 40-140/30 |
| 99-09-2 | 3-Nitroaniline | ND | | 2810 | 1690 | 60 | 1880 | 66 | 11 | 40-140/30 |
| 100-01-6 | 4-Nitroaniline | ND | | 2810 | 1890 | 67 | 1970 | 69 | 4 | 40-140/30 |
| 91-20-3 | Naphthalene | ND | | 2810 | 2080 | 74 | 1990 | 69 | 4 | 40-140/30 |
| 98-95-3 | Nitrobenzene | ND | | 2810 | 1790 | 64 | 1770 | 62 | 1 | 40-140/30 |
| 62-75-9 | n-Nitrosodimethylamine | ND | | 2810 | 1780 | 63 | 1730 | 60 | 3 | 40-140/30 |
| 621-64-7 | N-Nitroso-di-n-propylamine | ND | | 2810 | 2020 | 72 | 1970 | 69 | 3 | 40-140/30 |
| 86-30-6 | N-Nitrosodiphenylamine | ND | | 2810 | 2240 | 80 | 2140 | 75 | 5 | 40-140/30 |
| 85-01-8 | Phenanthrene | ND | | 2810 | 2160 | 77 | 2050 | 71 | 5 | 40-140/30 |
| 129-00-0 | Pyrene | ND | | 2810 | 2260 | 80 | 2180 | 76 | 4 | 40-140/30 |
| 110-86-1 | Pyridine | ND | | 2810 | 1140 | 41 | 1480 | 52 | 26 | 40-140/30 |

| CAS No. | Surrogate Recoveries | MS | MSD | M99906-1 | Limits |
|---|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 75% | 71% | 68% | 30-130% |
| 4165-62-2 | Phenol-d5 | 70% | 67% | 65% | 30-130% |
| 118-79-6 | 2,4,6-Tribromophenol | 80% | 74% | 70% | 30-130% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24854-MS | I72404.D | 1 | 05/11/11 | KR | 05/09/11 | OP24854 | MSI2596 |
| OP24854-MSD | I72405.D | 1 | 05/11/11 | KR | 05/09/11 | OP24854 | MSI2596 |
| M99906-1 | I72440.D | I | 05/12/11 | KR | 05/09/11 | OP24854 | MSI2598 |

The QC reported here applies to the following samples: Method: SW846 8270C

M99906-I, M99906-2

| CAS No. | Surrogate Recoveries | MS | MSD | M99906-1 | Limits |
|---|---|---|---|---|---|
| 4165-60-0 | Nitrobenzene-d5 | 67% | 65% | 60% | 30-130% |
| 321-60-8 | 2-Fluorobiphenyl | 76% | 70% | 68% | 30-130% |
| 1718-51-0 | Terphenyl-d14 | 86% | 81% | 83% | 30-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) High RPD due to possible matrix interference and/or sample non-homogeneity.
(c) Outside control limits. Blank Spike meets program technical requirements.
(d) Analyte not present in spiking solution.

# Semivolatile Internal Standard Area Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSI2595-CC2583 | Injection Date: | 05/11/11 |
| Lab File ID: | I72385.D | Injection Time: | 00:41 |
| Instrument ID: | GCMSI | Method: | SW846 8270C |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT | IS 6 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 109372 | 5.38 | 403684 | 6.67 | 190316 | 9.12 | 338006 | 11.63 | 261068 | 16.60 | 238759 | 19.13 |
| Upper Limit [a] | 218744 | 5.88 | 807368 | 7.17 | 380632 | 9.62 | 676012 | 12.13 | 522136 | 17.10 | 477518 | 19.63 |
| Lower Limit [b] | 54686 | 4.88 | 201842 | 6.17 | 95158 | 8.62 | 169003 | 11.13 | 130534 | 16.10 | 119380 | 18.63 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT | IS 6 AREA | RT |
| ZZZZZZ | 101032 | 5.37 | 351229 | 6.67 | 184325 | 9.11 | 288888 | 11.63 | 227466 | 16.59 | 196425 | 19.12 |
| ZZZZZZ | 110663 | 5.37 | 391657 | 6.67 | 219515 | 9.11 | 301604 | 11.63 | 269819 | 16.59 | 212321 | 19.12 |
| ZZZZZZ | 110951 | 5.37 | 418755 | 6.67 | 247633 | 9.11 | 382626 | 11.63 | 296649 | 16.59 | 264536 | 19.12 |
| ZZZZZZ | 103345 | 5.37 | 412584 | 6.67 | 182050 | 9.11 | 347169 | 11.63 | 289848 | 16.59 | 272207 | 19.12 |
| OP24806-MS | 82513 | 5.37 | 331077 | 6.67 | 179694 | 9.11 | 279462 | 11.63 | 236459 | 16.59 | 169578 | 19.12 |
| OP24806-MSD | 78919 | 5.37 | 289782 | 6.67 | 146878 | 9.11 | 274361 | 11.63 | 196521 | 16.59 | 196415 | 19.12 |
| M99762-8 | 75592 | 5.37 | 279514 | 6.67 | 142924 | 9.11 | 238127 | 11.63 | 231315 | 16.59 | 197496 | 19.12 |
| ZZZZZZ | 88215 | 5.37 | 319010 | 6.67 | 169928 | 9.11 | 235484 | 11.63 | 212328 | 16.58 | 194624 | 19.12 |
| ZZZZZZ | 76642 | 5.37 | 283839 | 6.67 | 146646 | 9.11 | 224244 | 11.63 | 199143 | 16.59 | 180238 | 19.12 |
| ZZZZZZ | 79691 | 5.37 | 295406 | 6.67 | 153544 | 9.11 | 245024 | 11.63 | 200616 | 16.58 | 164761 | 19.12 |
| ZZZZZZ | 76390 | 5.37 | 281563 | 6.67 | 145699 | 9.11 | 237760 | 11.63 | 205317 | 16.58 | 186671 | 19.12 |
| ZZZZZZ | 80501 | 5.37 | 292730 | 6.67 | 152186 | 9.11 | 243587 | 11.63 | 212447 | 16.59 | 189114 | 19.12 |
| ZZZZZZ | 70192 | 5.37 | 272135 | 6.67 | 137428 | 9.11 | 218156 | 11.63 | 189467 | 16.58 | 171263 | 19.12 |
| ZZZZZZ | 79057 | 5.37 | 295837 | 6.67 | 150126 | 9.11 | 236571 | 11.63 | 199831 | 16.59 | 181777 | 19.12 |
| ZZZZZZ | 76467 | 5.37 | 289803 | 6.67 | 150693 | 9.11 | 239358 | 11.63 | 201707 | 16.58 | 181103 | 19.12 |
| OP24854-MB | 84802 | 5.38 | 311365 | 6.67 | 160268 | 9.11 | 243498 | 11.63 | 188766 | 16.58 | 167335 | 19.12 |
| OP24854-BS | 87800 | 5.38 | 321281 | 6.67 | 162799 | 9.11 | 256944 | 11.63 | 204707 | 16.59 | 168086 | 19.12 |
| OP24854-BSD | 85010 | 5.38 | 311880 | 6.67 | 156875 | 9.11 | 244002 | 11.63 | 198772 | 16.59 | 169567 | 19.12 |
| OP24854-MS | 89206 | 5.38 | 322517 | 6.67 | 165552 | 9.11 | 257246 | 11.63 | 199468 | 16.59 | 177353 | 19.12 |
| OP24854-MSD | 83906 | 5.38 | 308736 | 6.67 | 163885 | 9.11 | 260222 | 11.63 | 202040 | 16.59 | 179182 | 19.12 |

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.1

# Semivolatile Internal Standard Area Summary



Job Number: M99906
Account: SHELLW1C Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSI2596-CC2604 | Injection Date: | 05/11/11 |
| Lab File ID: | I72385B.D | Injection Time: | 00:41 |
| Instrument ID: | GCMSI | Method: | SW846 8270C |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT | IS 6 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 109372 | 5.38 | 403684 | 6.67 | 190318 | 9.12 | 338006 | 11.63 | 261068 | 16.60 | 238759 | 19.13 |
| Upper Limit [a] | 218744 | 5.88 | 807368 | 7.17 | 380636 | 9.62 | 676012 | 12.13 | 522136 | 17.10 | 477518 | 19.63 |
| Lower Limit [b] | 54686 | 4.88 | 201842 | 6.17 | 95159 | 8.62 | 169003 | 11.13 | 130534 | 16.10 | 119380 | 18.63 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT | IS 6 AREA | RT |
| ZZZZZZ | 101032 | 5.37 | 351229 | 6.67 | 184325 | 9.11 | 288888 | 11.63 | 227466 | 16.59 | 196425 | 19.12 |
| ZZZZZZ | 110663 | 5.37 | 391657 | 6.67 | 219515 | 9.11 | 301604 | 11.63 | 269819 | 16.59 | 212321 | 19.12 |
| ZZZZZZ | 110951 | 5.37 | 418755 | 6.67 | 247633 | 9.11 | 382626 | 11.63 | 296649 | 16.59 | 264536 | 19.12 |
| ZZZZZZ | 103345 | 5.37 | 412584 | 6.67 | 182050 | 9.11 | 347169 | 11.63 | 289848 | 16.59 | 272207 | 19.12 |
| OP24806-MS | 82513 | 5.37 | 331077 | 6.67 | 179694 | 9.11 | 279462 | 11.63 | 236459 | 16.59 | 169578 | 19.12 |
| OP24806-MSD | 78919 | 5.37 | 289782 | 6.67 | 146878 | 9.11 | 274361 | 11.63 | 196521 | 16.59 | 196415 | 19.12 |
| M99762-8 | 75592 | 5.37 | 279514 | 6.67 | 142924 | 9.11 | 238127 | 11.63 | 231315 | 16.59 | 197496 | 19.12 |
| ZZZZZZ | 88215 | 5.37 | 319010 | 6.67 | 169928 | 9.11 | 235484 | 11.63 | 212328 | 16.58 | 194624 | 19.12 |
| ZZZZZZ | 76642 | 5.37 | 283839 | 6.67 | 146646 | 9.11 | 224244 | 11.63 | 199143 | 16.59 | 180238 | 19.12 |
| ZZZZZZ | 79691 | 5.37 | 295406 | 6.67 | 153544 | 9.11 | 245024 | 11.63 | 200616 | 16.58 | 164761 | 19.12 |
| ZZZZZZ | 76390 | 5.37 | 281563 | 6.67 | 145699 | 9.11 | 237760 | 11.63 | 205317 | 16.58 | 186671 | 19.12 |
| ZZZZZZ | 80501 | 5.37 | 292730 | 6.67 | 152186 | 9.11 | 243587 | 11.63 | 212447 | 16.59 | 189114 | 19.12 |
| ZZZZZZ | 70192 | 5.37 | 272135 | 6.67 | 137428 | 9.11 | 218156 | 11.63 | 189467 | 16.58 | 171263 | 19.12 |
| ZZZZZZ | 79057 | 5.37 | 295837 | 6.67 | 150126 | 9.11 | 236571 | 11.63 | 199831 | 16.59 | 181777 | 19.12 |
| ZZZZZZ | 76467 | 5.37 | 289803 | 6.67 | 150693 | 9.11 | 239358 | 11.63 | 201707 | 16.58 | 181103 | 19.12 |
| OP24854-MB | 84802 | 5.38 | 311365 | 6.67 | 160268 | 9.11 | 243498 | 11.63 | 188766 | 16.58 | 167335 | 19.12 |
| OP24854-BS | 87800 | 5.38 | 321281 | 6.67 | 162799 | 9.11 | 256944 | 11.63 | 204707 | 16.59 | 168086 | 19.12 |
| OP24854-BSD | 85010 | 5.38 | 311880 | 6.67 | 156875 | 9.11 | 244002 | 11.63 | 198772 | 16.59 | 169567 | 19.12 |
| OP24854-MS | 89206 | 5.38 | 322517 | 6.67 | 165552 | 9.11 | 257246 | 11.63 | 199468 | 16.59 | 177353 | 19.12 |
| OP24854-MSD | 83906 | 5.38 | 308736 | 6.67 | 163885 | 9.11 | 260222 | 11.63 | 202040 | 16.59 | 179182 | 19.12 |

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Semivolatile Internal Standard Area Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSI2598-CC2604 | Injection Date: | 05/12/11 |
| Lab File ID: | I72425A.D | Injection Time: | 09:38 |
| Instrument ID: | GCMSI | Method: | SW846 8270C |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT | IS 6 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 201974 | 5.37 | 746805 | 6.67 | 396638 | 9.11 | 639337 | 11.63 | 508587 | 16.59 | 496430 | 19.12 |
| Upper Limit [a] | 403948 | 5.87 | 1493610 | 7.17 | 793276 | 9.61 | 1278674 | 12.13 | 1017174 | 17.09 | 992860 | 19.62 |
| Lower Limit [b] | 100987 | 4.87 | 373403 | 6.17 | 198319 | 8.61 | 319669 | 11.13 | 254294 | 16.09 | 248215 | 18.62 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT | IS 6 AREA | RT |
| OP24865-MS | 160058 | 5.36 | 600106 | 6.66 | 313789 | 9.10 | 487319 | 11.62 | 390857 | 16.58 | 297336 | 19.11 |
| OP24865-MSD | 137375 | 5.37 | 510347 | 6.66 | 264768 | 9.10 | 413555 | 11.62 | 321446 | 16.58 | 254480 | 19.11 |
| ZZZZZZ | 162815 | 5.37 | 598705 | 6.66 | 312074 | 9.10 | 488841 | 11.62 | 360917 | 16.58 | 262399 | 19.11 |
| ZZZZZZ | 166478 | 5.37 | 613151 | 6.66 | 312759 | 9.10 | 476475 | 11.62 | 361085 | 16.57 | 271700 | 19.11 |
| M99983-3 | 133743 | 5.37 | 500363 | 6.66 | 261830 | 9.10 | 405948 | 11.62 | 321130 | 16.57 | 260408 | 19.11 |
| ZZZZZZ | 167074 | 5.37 | 618183 | 6.66 | 321093 | 9.10 | 499154 | 11.62 | 387167 | 16.57 | 300209 | 19.11 |
| ZZZZZZ | 152826 | 5.36 | 546430 | 6.66 | 276295 | 9.10 | 433207 | 11.62 | 309221 | 16.58 | 250806 | 19.11 |
| ZZZZZZ | 149979 | 5.37 | 557178 | 6.66 | 290395 | 9.10 | 470463 | 11.62 | 318538 | 16.58 | 271179 | 19.11 |
| ZZZZZZ | 155921 | 5.37 | 567245 | 6.66 | 296806 | 9.10 | 461284 | 11.62 | 377222 | 16.57 | 281066 | 19.11 |
| ZZZZZZ | 136156 | 5.36 | 509309 | 6.66 | 263447 | 9.10 | 408342 | 11.62 | 309504 | 16.59 | 474954 | 19.14 |
| ZZZZZZ | 130876 | 5.37 | 469987 | 6.66 | 249191 | 9.10 | 390466 | 11.62 | 274740 | 16.57 | 222205[c] | 19.11 |
| ZZZZZZ | 129628 | 5.36 | 470081 | 6.66 | 248118 | 9.10 | 390546 | 11.62 | 285284 | 16.58 | 236259[c] | 19.12 |
| ZZZZZZ | 163039 | 5.36 | 642533 | 6.66 | 332192 | 9.10 | 530607 | 11.62 | 389108 | 16.57 | 278393 | 19.11 |
| ZZZZZZ | 156660 | 5.36 | 574056 | 6.66 | 306752 | 9.10 | 487506 | 11.62 | 392515 | 16.57 | 288995 | 19.11 |
| M99906-1 | 134450 | 5.36 | 502026 | 6.66 | 263821 | 9.10 | 421366 | 11.62 | 345710 | 16.57 | 312204 | 19.11 |
| M99906-2 | 153200 | 5.36 | 577215 | 6.66 | 296937 | 9.10 | 470288 | 11.62 | 351587 | 16.57 | 312605 | 19.11 |
| ZZZZZZ | 145392 | 5.36 | 530169 | 6.66 | 277311 | 9.10 | 427377 | 11.62 | 354771 | 16.59 | 466496 | 19.12 |
| ZZZZZZ | 127630 | 5.36 | 476391 | 6.66 | 246772 | 9.10 | 382808 | 11.62 | 303507 | 16.57 | 286698 | 19.11 |
| ZZZZZZ | 133722 | 5.36 | 497883 | 6.66 | 252384 | 9.10 | 394005 | 11.62 | 309543 | 16.57 | 301531 | 19.11 |
| ZZZZZZ | 139511 | 5.36 | 517890 | 6.66 | 269189 | 9.10 | 417074 | 11.62 | 319016 | 16.57 | 377228 | 19.12 |

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Semivolatile Surrogate Recovery Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

Method: SW846 8270C Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 | S4 | S5 | S6 |
|---|---|---|---|---|---|---|---|
| M99906-1 | I72440.D | 68.0 | 65.0 | 70.0 | 60.0 | 68.0 | 83.0 |
| M99906-2 | I72441.D | 71.0 | 68.0 | 69.0 | 64.0 | 71.0 | 84.0 |
| OP24854-BS | I72402.D | 81.0 | 77.0 | 82.0 | 73.0 | 82.0 | 91.0 |
| OP24854-BSD | I72403.D | 79.0 | 74.0 | 80.0 | 71.0 | 78.0 | 87.0 |
| OP24854-MB | I72401.D | 76.0 | 72.0 | 75.0 | 69.0 | 75.0 | 93.0 |
| OP24854-MS | I72404.D | 75.0 | 70.0 | 80.0 | 67.0 | 76.0 | 86.0 |
| OP24854-MSD | I72405.D | 71.0 | 67.0 | 74.0 | 65.0 | 70.0 | 81.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2-Fluorophenol | 30-130% |
| S2 = Phenol-d5 | 30-130% |
| S3 = 2,4,6-Tribromophenol | 30-130% |
| S4 = Nitrobenzene-d5 | 30-130% |
| S5 = 2-Fluorobiphenyl | 30-130% |
| S6 = Terphenyl-d14 | 30-130% |

6.5.1

New England ACCUTEST LABORATORIES

General Chemistry

## QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: M99906
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Sample: M99906-1 | Analyzed: 05-MAY-11 by CF | | Method: SM21 2540 B MOD. |
| ClientID: SVE-25(S) 12-14 | | | |
| Wet Weight (Total) | 36.782 | g | |
| Tare Weight | 27.283 | g | |
| Dry Weight (Total) | 35.469 | g | |
| Solids, Percent | 86.2 | % | |

| | | | |
|---|---|---|---|
| Sample: M99906-2 | Analyzed: 05-MAY-11 by CF | | Method: SM21 2540 B MOD. |
| ClientID: SVE-25(S) 19-21 | | | |
| Wet Weight (Total) | 28.525 | g | |
| Tare Weight | 20.501 | g | |
| Dry Weight (Total) | 28.09 | g | |
| Solids, Percent | 94.6 | % | |

7.1

7

# SVE Interim System Data Review

**Laboratory SDG: MC125**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 9/26/2011**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| VMP-31-10-11 | VMP-31-17-18.5 |
| VMP-31-17-18.5-Dup | VMP-31-30-31 |
| VMP-32-10-12 | VMP-32-21.5-22 |
| VMP-32-30-31 | |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS recoveries were outside evaluation criteria. VOC MS/MSD recoveries and MS/MSD RPDs were outside evaluation criteria in sample VMP-32-10-12. VOC surrogate recoveries were outside evaluation criteria. Although not indicated in the laboratory case narrative, the difference in benzene results for the field duplicate pair VMP-31-17-18.5/VMP-31-17-18.5-Dup was greater than five times (5X) the reporting level; therefore results were qualified as estimated. Additionally, professional judgment was used to qualify acetone in samples VMP-31-17-18.5-Dup and VMP-31-10-11. These issues are addressed further in the appropriate sections below.

The cooler receipt form indicated samples were received by the laboratory at 0.8° C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSP1766-BS | VOCs | Acrolein | **240** | N/A | 70-130 |
| MSP1766-BS | VOCs | Chloromethane | **69** | N/A | 70-130 |
| MSP1766-BS | VOCs | Naphthalene | **145** | N/A | 70-130 |
| MSP1766-BS | VOCs | Styrene | **133** | N/A | 70-130 |
| MSP1766-BS | VOCs | 1,2,3-Trichlorobenzene | **158** | N/A | 70-130 |
| MSP1766-BS1 | VOCs | Acrolein | **256** | N/A | 70-130 |
| MSP1766-BS1 | VOCs | Acrylonitrile | **59** | N/A | 70-130 |
| MSP1766-BS1 | VOCs | Bromomethane | **68** | N/A | 70-130 |
| MSP1766-BS1 | VOCs | 2-Butanone (MEK) | **69** | N/A | 70-130 |
| MSP1766-BS1 | VOCs | Chloromethane | **55** | N/A | 70-130 |
| MSP1766-BS1 | VOCs | Methylene chloride | **68** | N/A | 70-130 |
| MSP1766-BS1 | VOCs | Vinyl Acetate | **69** | N/A | 70-130 |

Analytical data that required qualification based on LCS data are included in the table below. Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification.

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| VMP-31-10-11 | VOCs | Acrylonitrile | **UJ** |
| VMP-31-10-11 | VOCs | Bromomethane | **UJ** |
| VMP-31-10-11 | VOCs | 2-Butanone (MEK) | **UJ** |
| VMP-31-10-11 | VOCs | Chloromethane | **UJ** |
| VMP-31-10-11 | VOCs | Methylene chloride | **UJ** |
| VMP-31-10-11 | VOCs | Vinyl Acetate | **UJ** |
| VMP-31-17-18.5 | VOCs | Chloromethane | **UJ** |
| VMP-31-17-18.5-D | VOCs | Chloromethane | **UJ** |
| VMP-31-30-31 | VOCs | Acrylonitrile | **UJ** |
| VMP-31-30-31 | VOCs | Bromomethane | **UJ** |
| VMP-31-30-31 | VOCs | 2-Butanone (MEK) | **UJ** |
| VMP-31-30-31 | VOCs | Chloromethane | **UJ** |
| VMP-31-30-31 | VOCs | Methylene chloride | **UJ** |
| VMP-31-30-31 | VOCs | Vinyl Acetate | **UJ** |

| Sample ID | Parameter | Analyte | Qualification |
|---|---|---|---|
| VMP-32-10-12 | VOCs | Acrylonitrile | **UJ** |
| VMP-32-10-12 | VOCs | Bromomethane | **UJ** |
| VMP-32-10-12 | VOCs | 2-Butanone (MEK) | **UJ** |
| VMP-32-10-12 | VOCs | Chloromethane | **UJ** |
| VMP-32-10-12 | VOCs | Methylene chloride | **UJ** |
| VMP-32-10-12 | VOCs | Vinyl Acetate | **UJ** |
| VMP-32-21.5-22 | VOCs | Acrylonitrile | **UJ** |
| VMP-32-21.5-22 | VOCs | Bromomethane | **UJ** |
| VMP-32-21.5-22 | VOCs | 2-Butanone (MEK) | **UJ** |
| VMP-32-21.5-22 | VOCs | Chloromethane | **UJ** |
| VMP-32-21.5-22 | VOCs | Methylene chloride | **UJ** |
| VMP-32-21.5-22 | VOCs | Vinyl Acetate | **UJ** |
| VMP-32-30-31 | VOCs | Acrylonitrile | **UJ** |
| VMP-32-30-31 | VOCs | Bromomethane | **UJ** |
| VMP-32-30-31 | VOCs | 2-Butanone (MEK) | **UJ** |
| VMP-32-30-31 | VOCs | Chloromethane | **UJ** |
| VMP-32-30-31 | VOCs | Methylene chloride | **UJ** |
| VMP-32-30-31 | VOCs | Vinyl Acetate | **UJ** |

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

No

| Sample ID | Parameter | Surrogate | Recovery | Criteria |
|---|---|---|---|---|
| VMP-32-21.5-22 | VOCs | Toluene-D8 | **133** | 70-130 |

Analytical data that required qualification based on surrogate data are included in the table below.

| Sample ID | Parameter | Surrogate | Qualification |
|---|---|---|---|
| VMP-32-21.5-22 | VOCs | All detects | **J** |

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

Yes, sample VMP-32-10-12 was spiked and analyzed for VOCs.

*Were MS/MSD recoveries within evaluation criteria?*

No

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/RPD Criteria |
|---|---|---|---|---|---|
| VMP-32-10-12 | VOCs | Acetone | **58/51** | 5 | 70-130/30 |
| VMP-32-10-12 | VOCs | Acrolein | 87/**48** | **49** | 70-130/30 |
| VMP-32-10-12 | VOCs | Bromobenzene | **69/**94 | **39** | 70-130/30 |
| VMP-32-10-12 | VOCs | Bromoform | 98/129 | **35** | 70-130/30 |
| VMP-32-10-12 | VOCs | 2-Butanone (MEK) | **61/68** | 19 | 70-130/30 |

| MS/MSD ID | Parameter | Analyte | MS/MSD Recovery | RPD | MS/MSD/RPD Criteria |
|---|---|---|---|---|---|
| VMP-32-10-12 | VOCs | n-Butylbenzene | 70/88 | **32** | 70-130/30 |
| VMP-32-10-12 | VOCs | tert-Butylbenzene | 77/96 | **31** | 70-130/30 |
| VMP-32-10-12 | VOCs | 2-Chloroethyl vinyl ether | **0/0** | N/A | 70-130/30 |
| VMP-32-10-12 | VOCs | Chloromethane | **56/63** | 22 | 70-130/30 |
| VMP-32-10-12 | VOCs | o-Chlorotoluene | **65**/84 | **34** | 70-130/30 |
| VMP-32-10-12 | VOCs | 1,2-Dibromo-3-chloropropane | 79/121 | **51** | 70-130/30 |
| VMP-32-10-12 | VOCs | 1,2-Dichlorobenzene | **56**/87 | **52** | 70-130/30 |
| VMP-32-10-12 | VOCs | 1,3-Dichlorobenzene | **58**/83 | **43** | 70-130/30 |
| VMP-32-10-12 | VOCs | 1,4-Dichlorobenzene | **56**/82 | **46** | 70-130/30 |
| VMP-32-10-12 | VOCs | 1,4-Dioxane | **154/132** | 7 | 70-130/30 |
| VMP-32-10-12 | VOCs | Hexachlorobutadiene | **66**/92 | **42** | 70-130/30 |
| VMP-32-10-12 | VOCs | p-Isopropyltoluene | 72/92 | **33** | 70-130/30 |
| VMP-32-10-12 | VOCs | Naphthalene | **39**/96 | **92** | 70-130/30 |
| VMP-32-10-12 | VOCs | Styrene | **69/**98 | **43** | 70-130/30 |
| VMP-32-10-12 | VOCs | 1,1,2,2-Tetrachloroethane | 77/98 | **33** | 70-130/30 |
| VMP-32-10-12 | VOCs | 1,2,3-Trichlorobenzene | **47**/92 | **72** | 70-130/30 |
| VMP-32-10-12 | VOCs | 1,2,4-Trichlorobenzene | **55**/80 | **46** | 70-130/30 |
| VMP-32-10-12 | VOCs | 1,2,3-Trichloropropane | 82/103 | **31** | 70-130/30 |
| VMP-32-10-12 | VOCs | 1,2,4-Trimethylbenzene | 70/93 | **36** | 70-130/30 |
| VMP-32-10-12 | VOCs | 1,3,5-Trimethylbenzene | 72-91 | **31** | 70-130/30 |
| VMP-32-10-12 | VOCs | Vinyl Acetate | **43/9** | **125** | 70-130/30 |

USEPA National Functional Guidelines for Organic Data Review indicates that organic data does not require qualification based on MS/MSD data alone and LCS recoveries were within evaluation criteria for these compounds, with the exception of 2-butanone (MEK), chloromethane, and vinyl acetate, which had been previously qualified, therefore no further qualification of the data was required.

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

Yes

| Field ID | Field Duplicate ID |
|---|---|
| VMP-31-17-18.5 | VMP-31-17-18.5-Dup |

*Were field duplicates within evaluation criteria?*

No

| Field ID | Field Duplicate ID | Parameter | Analyte | RPD | Qualification |
|---|---|---|---|---|---|
| VMP-31-17-18.5 | VMP-31-17-18.5-Dup | VOCs | Benzene | **>5X RL** | **J/J** |

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

## 12.0 Additional Qualifications

*Were additional qualifications applied?*

Yes

Professional judgment was used to qualify the common laboratory contaminant acetone reported at concentrations greater than two times (2X) the RL since acetone is not representative of site conditions. Additionally, USEPA Method 5035A states that acidification of certain soils with sodium bisulfate may produce a false positive acetone artifact of 100-200 ppb, or more. Acetone reported at concentrations less than 200 ppb (ug/kg) were qualified.

| Field ID | Analyte | New RL | Qualification | Comments |
|---|---|---|---|---|
| VMP-31-17-18.5-Dup | Acetone | 13.8 | **U** | Professional Judgment |
| VMP-31-10-11 | Acetone | 20.8 | **U** | Professional Judgment |

New England ACCUTEST LABORATORIES

06/08/11



## Technical Report for

**Shell Oil**

URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

INC#97216640 / SAP#340061

Accutest Job Number: MC125

Sampling Date: 05/10/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: **90**

Reviewed on 9/26/2011

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Reza Tand
Lab Director

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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# Sample Summary

Shell Oil

Job No: MC125

URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time | By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|---|
| MC125-1 | 05/10/11 | 10:30 | MC | 05/12/11 | SO | Soil | VMP-31-10-11 |
| MC125-2 | 05/10/11 | 11:00 | MC | 05/12/11 | SO | Soil | VMP-31-17-18.5 |
| MC125-3 | 05/10/11 | 11:00 | MC | 05/12/11 | SO | Soil | VMP-31-17-18.5-D |
| MC125-4 | 05/10/11 | 11:20 | MC | 05/12/11 | SO | Soil | VMP-31-30-31 |
| MC125-5 | 05/10/11 | 15:30 | MC | 05/12/11 | SO | Soil | VMP-32-10-12 |
| MC125-5D | 05/10/11 | 15:30 | MC | 05/12/11 | SO | Soil Dup/MSD | VMP-32-10-12 |
| MC125-5S | 05/10/11 | 15:30 | MC | 05/12/11 | SO | Soil Matrix Spike | VMP-32-10-12 |
| MC125-6 | 05/10/11 | 15:45 | MC | 05/12/11 | SO | Soil | VMP-32-21.5-22 |
| MC125-7 | 05/10/11 | 16:00 | MC | 05/12/11 | SO | Soil | VMP-32-30-31 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

ACCUTEST Laboratories

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# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC125 |
| **Site:** | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Ha | **Report Date** | 5/31/2011 10:25:40 AM |

7 Sample(s) were collected on 05/10/2011 and were received at Accutest on 05/12/2011 properly preserved, at 0.8 Deg. C and intact. These Samples received an Accutest job number of MC125. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented iu the Results Snmmary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC sunmary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** SO **Batch ID:** MSP1766

- All samples were analyzed within the recommended method holding tinne.
- Sample(s) MC125-5MS, MC125-5MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- BS Recovery(s) for Chloromethane, 1,2,3-Trichlorobenzene, Naphthalene, Styrene are outside control limits. Blank Spike meets program technical requirements.
- Matrix Spike Recovery(s) for 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene, 1,2-Dichlorobenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, 1,4-Dioxane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, Acetone, Bromobenzene, Chloromethane, Hexachlorobutadiene, Naphthalene, o-Chlorotoluene, p-Chlorotoluene, Styrene, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interferenee. Refer to Blank Spike.
- Matrix Spike Duplicate Recovery(s) for 1,4-Dioxane, 2-Butanone (MEK), 2-Chloroethyl vinyl ether, Acetone, Chloromethane, Acrolein, Vinyl Acetate are outside control limits. Outside control limits due to possible matrix interferenee. Refer to Blank Spike.
- RPD(s) for MSD for 1,1,2,2-Tetrachloroethane, 1,2,3-Trichlorobenzene, 1,2,3-Trichloropropane, 1,2,4-Trichlorobenzene, 1,2,4-Trimethylbenzene, 1,2-Dibromo-3-chloropropane, 1,2-Dichlorobenzene, 1,3,5-Trimethylbenzene, 1,3-Dichlorobenzene, 1,4-Dichlorobenzene, Acrolein, Bromobenzene, Bromoform, Hexachlorobutadiene, n-Butylbenzene, Naphthalene, o-Chlorotoluene, p-Chlorotoluene, p-Isopropyltoluene, Styrene, tert-Butylbenzene, Vinyl Acetate are outside control limits for sample MC125-5MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- MC125-6: Confirmation run for surrogate recoveries.
- MSP1766-BS, BS1 for Acrolein: Outside control limits. Associated samples are non-detect for this compound.
- MC125-6 for Toluene-D8: Outside control limits due to possible matrix interference. Confirmed by reanalysis.
- BS1 Recovery(s) for 2-Butanone (MEK), Acrylonitrile, Bromomethane, Chloromethane, Methylene chloride, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.

## Extractables by GCMS By Method SW846 8270C

**Matrix** SO **Batch ID:** OP24969

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC125-5MS, MC125-5MSD were used as the QC samples indicated.
- MS/MSD Recovery(s) for Hexachlorocyclopentadiene are outside control limits. Outside control limits due to possible matrix interference. Refer to Blank Spike.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN34884 |
|---|---|

- Sample(s) MC125-5DUP were used as the QC samples for Solids, Percent.

| Matrix SO | Batch ID: GN34904 |
|---|---|

- Sample(s) MC125-6DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC125).

New England ACCUTEST LABORATORIES



## Sample Results

Report of Analysis

# Report of Analysis



3.1
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| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-10-11 | | |
| Lab Sample ID: | MC125-1 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 81.2 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P53265.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 6.31 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 4.9 | 4.9 | ug/kg | |
| 107-02-8 | Acrolein | ND | 24 | 16 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 4.9 | 2.0 | ug/kg | UJ |
| 71-43-2 | Benzene | 4.4 | 0.49 | 0.12 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 4.9 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 4.9 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.72 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.46 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.66 | ug/kg | UJ |
| 78-93-3 | 2-Butanone (MEK) | ND | 4.9 | 1.2 | ug/kg | UJ |
| 104-51-8 | n-Butylbenzene | ND | 4.9 | 1.2 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 4.9 | 0.16 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 4.9 | 0.64 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 4.9 | 0.95 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 2.0 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 1.2 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 4.9 | 0.25 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 4.9 | 4.9 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.93 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 4.9 | 4.9 | ug/kg | UJ |
| 95-49-8 | o-Chlorotoluene | ND | 4.9 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 4.9 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 4.9 | 4.9 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.64 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.33 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 1.1 | ng/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.31 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-10-11 | | |
| Lab Sample ID: | MC125-1 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 81.2 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.26 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.96 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.22 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 4.9 | 1.1 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 4.9 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 4.9 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 0.97 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.67 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 24 | 24 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 4.9 | 3.0 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 4.9 | 4.9 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 4.9 | 4.9 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 1.3 | 4.9 | 0.15 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | ND | 4.9 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.60 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 4.9 | 4.9 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 4.9 | 0.30 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 1.2 | ug/kg | UJ |
| 91-20-3 | Naphthalene | ND | 4.9 | 4.9 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 4.9 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 4.9 | 0.49 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 4.9 | 0.98 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.17 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.16 | ug/kg | |
| 108-88-3 | Toluene | ND | 4.9 | 0.17 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 4.9 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 4.9 | 4.9 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.95 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.19 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.90 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 4.9 | 0.20 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 4.9 | 0.15 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 4.9 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 4.9 | 1.1 | ug/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 2.0 | ug/kg | |
| | m,p-Xylene | 1.2 | 2.0 | 0.25 | ug/kg | J |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | 1.2 | 2.0 | 0.43 | ug/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-10-11 | | |
| Lab Sample ID: | MC125-1 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 81.2 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 113% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 124% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 114% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-10-11 | | |
| Lab Sample ID: | MC125-1 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 81.2 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | 172787.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 20.3 g | 1.0 ml |
| Run #2 | | |

ABN Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | ND | 610 | 47 | ug/kg | |
| 95-57-8 | 2-Chlorophenol | ND | 300 | 16 | ug/kg | |
| 59-50-7 | 4-Chloro-3-methyl phenol | ND | 610 | 21 | ug/kg | |
| 120-83-2 | 2,4-Dichlorophenol | ND | 610 | 36 | ug/kg | |
| 105-67-9 | 2,4-Dimethylphenol | ND | 610 | 61 | ug/kg | |
| 51-28-5 | 2,4-Dinitrophenol | ND | 1200 | 300 | ug/kg | |
| 534-52-1 | 4,6-Dinitro-o-cresol | ND | 610 | 300 | ug/kg | |
| 95-48-7 | 2-Methylphenol | ND | 610 | 17 | ug/kg | |
| | 3&4-Methylphenol | ND | 610 | 32 | ug/kg | |
| 88-75-5 | 2-Nitrophenol | ND | 610 | 37 | ug/kg | |
| 100-02-7 | 4-Nitrophenol | ND | 1200 | 300 | ug/kg | |
| 87-86-5 | Pentachlorophenol | ND | 610 | 56 | ug/kg | |
| 108-95-2 | Phenol | ND | 300 | 50 | ug/kg | |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | 610 | 45 | ug/kg | |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | 610 | 42 | ug/kg | |
| 83-32-9 | Acenaphthene | ND | 300 | 26 | ug/kg | |
| 208-96-8 | Acenaphthylene | ND | 300 | 23 | ug/kg | |
| 62-53-3 | Aniline | ND | 610 | 610 | ug/kg | |
| 120-12-7 | Anthracene | ND | 300 | 24 | ug/kg | |
| 56-55-3 | Benzo(a)anthracene | ND | 300 | 11 | ug/kg | |
| 50-32-8 | Benzo(a)pyrene | ND | 300 | 18 | ug/kg | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 300 | 36 | ug/kg | |
| 191-24-2 | Benzo(g,h,i)perylene | ND | 300 | 20 | ug/kg | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 300 | 9.0 | ug/kg | |
| 101-55-3 | 4-Bromophenyl phenyl ether | ND | 300 | 25 | ng/kg | |
| 85-68-7 | Butyl benzyl phthalate | ND | 300 | 13 | ug/kg | |
| 100-51-6 | Benzyl Alcohol | ND | 610 | 37 | ug/kg | |
| 91-58-7 | 2-Chloronaphthalene | ND | 300 | 26 | ug/kg | |
| 106-47-8 | 4-Chloroaniline | ND | 610 | 150 | ug/kg | |
| 218-01-9 | Chrysene | ND | 300 | 9.9 | ug/kg | |
| 111-91-1 | bis(2-Chloroethoxy)methane | ND | 300 | 24 | ug/kg | |
| 111-44-4 | bis(2-Chloroethyl)ether | ND | 300 | 6.5 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-10-11 | | |
| Lab Sample ID: | MC125-1 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 81.2 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

ABN Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 108-60-1 | bis(2-Chloroisopropyl)ether | ND | 300 | 29 | ug/kg | |
| 7005-72-3 | 4-Chlorophenyl phenyl ether | ND | 300 | 27 | ug/kg | |
| 122-66-7 | 1,2-Diphenylhydrazine | ND | 300 | 26 | ug/kg | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | 610 | 150 | ug/kg | |
| 606-20-2 | 2,6-Dinitrotoluene | ND | 610 | 29 | ug/kg | |
| 91-94-1 | 3,3'-Dichlorobenzidine | ND | 300 | 7.3 | ug/kg | |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | 300 | 20 | ug/kg | |
| 132-64-9 | Dibenzofuran | ND | 300 | 26 | ug/kg | |
| 84-74-2 | Di-n-butyl phthalate | ND | 300 | 28 | ug/kg | |
| 117-84-0 | Di-n-octyl phthalate | ND | 300 | 16 | ug/kg | |
| 84-66-2 | Diethyl phthalate | ND | 300 | 26 | ug/kg | |
| 131-11-3 | Dimethyl phthalate | ND | 300 | 21 | ug/kg | |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 31.9 | 300 | 21 | ug/kg | J |
| 206-44-0 | Fluoranthene | ND | 300 | 10 | ug/kg | |
| 86-73-7 | Fluorene | ND | 300 | 6.7 | ug/kg | |
| 118-74-1 | Hexachlorobenzene | ND | 300 | 26 | ug/kg | |
| 77-47-4 | Hexachlorocyclopentadiene | ND | 610 | 4.1 | ug/kg | |
| 67-72-1 | Hexachloroethane | ND | 300 | 25 | ug/kg | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 300 | 19 | ug/kg | |
| 78-59-1 | Isophorone | ND | 300 | 30 | ug/kg | |
| 90-12-0 | 1-Methylnaphthalene | ND | 300 | 300 | ug/kg | |
| 91-57-6 | 2-Methylnaphthalene | ND | 300 | 26 | ug/kg | |
| 88-74-4 | 2-Nitroaniline | ND | 610 | 150 | ug/kg | |
| 99-09-2 | 3-Nitroaniline | ND | 610 | 150 | ug/kg | |
| 100-01-6 | 4-Nitroaniline | ND | 610 | 23 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 300 | 7.0 | ug/kg | |
| 98-95-3 | Nitrobenzene | ND | 300 | 9.0 | ug/kg | |
| 62-75-9 | n-Nitrosodimethylamine | ND | 300 | 25 | ug/kg | |
| 621-64-7 | N-Nitroso-di-n-propylamine | ND | 300 | 19 | ug/kg | |
| 86-30-6 | N-Nitrosodiphenylamine | ND | 300 | 16 | ug/kg | |
| 85-01-8 | Phenanthrene | ND | 300 | 7.8 | ug/kg | |
| 129-00-0 | Pyrene | ND | 300 | 9.8 | ug/kg | |
| 110-86-1 | Pyridine | ND | 610 | 610 | ug/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 67% | | 30-130% |
| 4165-62-2 | Phenol-d5 | 65% | | 30-130% |
| 118-79-6 | 2,4,6-Tribromophenol | 62% | | 30-130% |
| 4165-60-0 | Nitrobenzene-d5 | 56% | | 30-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-10-11 | | |
| Lab Sample ID: | MC125-1 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 81.2 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

ABN Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 321-60-8 | 2-Fluorobiphenyl | 61% | | 30-130% |
| 1718-51-0 | Terphenyl-d14 | 73% | | 30-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-17-18.5 | | |
| Lab Sample ID: | MC125-2 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 78.9 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P53239.D | 1 | 05/24/11 | AMY | n/a | u/a | MSP1766 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.24 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 6.0 | 6.0 | ug/kg | |
| 107-02-8 | Acrolein | ND | 30 | 20 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6.0 | 2.4 | ug/kg | |
| 71-43-2 | Benzene | 17.9 | 0.60 | 0.15 | ug/kg | J |
| 108-86-1 | Bromobenzene | ND | 6.0 | 0.23 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6.0 | 1.3 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.4 | 0.89 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.4 | 0.57 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.4 | 0.82 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 6.0 | 1.4 | ug/kg | |
| 104-51-8 | n-Butylbenzene | 13.6 | 6.0 | 1.5 | ug/kg | J |
| 135-98-8 | sec-Butylbenzene | 5.6 | 6.0 | 0.20 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 6.0 | 0.79 | ug/kg | |
| 75-15-0 | Carbon disulfide | 1.9 | 6.0 | 1.2 | ug/kg | J |
| 56-23-5 | Carbon tetrachloride | ND | 2.4 | 2.4 | ug/kg | |
| 108-90-7 | Chlorobenzeue | ND | 2.4 | 1.4 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6.0 | 0.31 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6.0 | 6.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.4 | 1.2 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6.0 | 6.0 | ug/kg | UJ |
| 95-49-8 | o-Chlorotoluene | ND | 6.0 | 0.17 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6.0 | 1.4 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6.0 | 6.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.4 | 0.79 | ug/kg | |
| 106-93-4 | 1,2-Dibrouoethane | ND | 2.4 | 0.23 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.4 | 0.18 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.4 | 0.17 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.4 | 0.17 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.4 | 0.41 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.4 | 0.18 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.4 | 1.3 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.4 | 0.38 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte fouud in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-17-18.5 | | |
| Lab Sample ID: | MC125-2 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 78.9 |
| Project: | URSMOSTL:Roxaua SVE / 21562593.00016 170 East Raud Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.4 | 0.33 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.4 | 1.2 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.4 | 0.28 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6.0 | 1.4 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6.0 | 0.22 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6.0 | 0.23 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.4 | 1.2 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.4 | 0.83 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 30 | 30 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6.0 | 3.8 | ug/kg | |
| 100-41-4 | Ethylbenzene | 1.8 | 2.4 | 0.16 | ug/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 6.0 | 6.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6.0 | 6.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | 11.9 | 6.0 | 0.19 | ug/kg | J |
| 99-87-6 | p-Isopropyltoluene | ND | 6.0 | 0.20 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.4 | 0.75 | ng/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6.0 | 6.0 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6.0 | 0.37 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.4 | 1.5 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 6.0 | 6.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 18.2 | 6.0 | 0.20 | ug/kg | J |
| 100-42-5 | Styrene | ND | 6.0 | 0.60 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6.0 | 1.2 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.4 | 0.21 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.4 | 0.20 | ug/kg | |
| 108-88-3 | Tolnene | 2.0 | 6.0 | 0.22 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6.0 | 1.3 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6.0 | 6.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.4 | 1.2 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.4 | 0.31 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.4 | 0.24 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.4 | 1.1 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6.0 | 0.25 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 6.0 | 0.19 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 6.0 | 0.22 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 6.0 | 1.4 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.4 | 2.4 | ug/kg | |
| | m,p-Xylene | 5.7 | 2.4 | 0.30 | ug/kg | J |
| 95-47-6 | o-Xylene | 0.56 | 2.4 | 0.22 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 5.7 | 2.4 | 0.53 | ug/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-17-18.5 | | |
| Lab Sample ID: | MC125-2 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 78.9 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 113% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 128% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 107% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
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J = Indicates an estimated valne
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-17-18.5 | | |
| Lab Sample ID: | MC125-2 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 78.9 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | I72788.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 20.1 g | 1.0 ml |
| Run #2 | | |

ABN Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | ND | 630 | 49 | ug/kg | |
| 95-57-8 | 2-Chlorophenol | ND | 310 | 17 | ug/kg | |
| 59-50-7 | 4-Chloro-3-methyl phenol | ND | 630 | 22 | ug/kg | |
| 120-83-2 | 2,4-Dichlorophenol | ND | 630 | 37 | ug/kg | |
| 105-67-9 | 2,4-Dimethylphenol | ND | 630 | 63 | ug/kg | |
| 51-28-5 | 2,4-Dinitrophenol | ND | 1300 | 310 | ug/kg | |
| 534-52-1 | 4,6-Dinitro-o-cresol | ND | 630 | 310 | ug/kg | |
| 95-48-7 | 2-Methylphenol | ND | 630 | 18 | ug/kg | |
| | 3&4-Methylphenol | ND | 630 | 33 | ug/kg | |
| 88-75-5 | 2-Nitrophenol | ND | 630 | 38 | ug/kg | |
| 100-02-7 | 4-Nitrophenol | ND | 1300 | 310 | ug/kg | |
| 87-86-5 | Pentachlorophenol | ND | 630 | 58 | ug/kg | |
| 108-95-2 | Phenol | ND | 310 | 52 | ug/kg | |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | 630 | 47 | ug/kg | |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | 630 | 43 | ug/kg | |
| 83-32-9 | Acenaphthene | ND | 310 | 27 | ug/kg | |
| 208-96-8 | Acenaphthylene | ND | 310 | 24 | ug/kg | |
| 62-53-3 | Aniline | ND | 630 | 630 | ug/kg | |
| 120-12-7 | Anthracene | ND | 310 | 25 | ug/kg | |
| 56-55-3 | Benzo(a)anthracene | ND | 310 | 12 | ug/kg | |
| 50-32-8 | Benzo(a)pyrene | ND | 310 | 19 | ug/kg | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 310 | 37 | ug/kg | |
| 191-24-2 | Benzo(g,h,i)perylene | ND | 310 | 20 | ug/kg | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 310 | 9.3 | ug/kg | |
| 101-55-3 | 4-Bromophenyl phenyl ether | ND | 310 | 26 | ug/kg | |
| 85-68-7 | Butyl benzyl phthalate | ND | 310 | 13 | ug/kg | |
| 100-51-6 | Benzyl Alcohol | ND | 630 | 38 | ug/kg | |
| 91-58-7 | 2-Chloronaphthalene | ND | 310 | 26 | ug/kg | |
| 106-47-8 | 4-Chloroaniline | ND | 630 | 160 | ug/kg | |
| 218-01-9 | Chrysene | ND | 310 | 10 | ug/kg | |
| 111-91-1 | bis(2-Chloroethoxy)methane | ND | 310 | 25 | ug/kg | |
| 111-44-4 | bis(2-Chloroethyl)ether | ND | 310 | 6.7 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-17-18.5 | | |
| Lab Sample ID: | MC125-2 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 78.9 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

ABN Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 108-60-1 | bis(2-Chloroisopropyl)ether | ND | 310 | 30 | ug/kg | |
| 7005-72-3 | 4-Chlorophenyl phenyl ether | ND | 310 | 28 | ug/kg | |
| 122-66-7 | 1,2-Diphenylhydrazine | ND | 310 | 26 | ug/kg | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | 630 | 160 | ug/kg | |
| 606-20-2 | 2,6-Dinitrotoluene | ND | 630 | 30 | ug/kg | |
| 91-94-1 | 3,3'-Dichlorobenzidine | ND | 310 | 7.6 | ug/kg | |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | 310 | 20 | ug/kg | |
| 132-64-9 | Dibenzofuran | ND | 310 | 27 | ug/kg | |
| 84-74-2 | Di-n-butyl phthalate | ND | 310 | 29 | ug/kg | |
| 117-84-0 | Di-n-octyl phthalate | ND | 310 | 17 | ug/kg | |
| 84-66-2 | Diethyl phthalate | ND | 310 | 27 | ug/kg | |
| 131-11-3 | Dimethyl phthalate | ND | 310 | 22 | ug/kg | |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | ND | 310 | 22 | ug/kg | |
| 206-44-0 | Fluoranthene | ND | 310 | 11 | ug/kg | |
| 86-73-7 | Fluorene | ND | 310 | 6.9 | ug/kg | |
| 118-74-1 | Hexachlorobenzene | ND | 310 | 27 | ug/kg | |
| 77-47-4 | Hexachlorocyclopentadiene | ND | 630 | 4.2 | ug/kg | |
| 67-72-1 | Hexachloroethane | ND | 310 | 26 | ug/kg | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 310 | 19 | ug/kg | |
| 78-59-1 | Isophorone | ND | 310 | 31 | ug/kg | |
| 90-12-0 | 1-Methylnaphthalene | ND | 310 | 310 | ug/kg | |
| 91-57-6 | 2-Methylnaphthalene | ND | 310 | 26 | ug/kg | |
| 88-74-4 | 2-Nitroaniline | ND | 630 | 160 | ug/kg | |
| 99-09-2 | 3-Nitroaniline | ND | 630 | 160 | ug/kg | |
| 100-01-6 | 4-Nitroaniline | ND | 630 | 23 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 310 | 7.3 | ug/kg | |
| 98-95-3 | Nitrobenzene | ND | 310 | 9.3 | ug/kg | |
| 62-75-9 | n-Nitrosodimethylamine | ND | 310 | 26 | ug/kg | |
| 621-64-7 | N-Nitroso-di-n-propylamine | ND | 310 | 20 | ug/kg | |
| 86-30-6 | N-Nitrosodiphenylamine | ND | 310 | 17 | ug/kg | |
| 85-01-8 | Phenanthrene | ND | 310 | 8.1 | ug/kg | |
| 129-00-0 | Pyrene | ND | 310 | 10 | ug/kg | |
| 110-86-1 | Pyridine | ND | 630 | 630 | ug/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 72% | | 30-130% |
| 4165-62-2 | Phenol-d5 | 72% | | 30-130% |
| 118-79-6 | 2,4,6-Tribromophenol | 68% | | 30-130% |
| 4165-60-0 | Nitrobenzene-d5 | 63% | | 30-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte fouod in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-I7-18.5 | | |
| Lab Sample ID: | MC125-2 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 78.9 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

ABN Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 321-60-8 | 2-Fluorobiphenyl | 68% | | 30-130% |
| 1718-51-0 | Terphenyl-d14 | 77% | | 30-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-17-18.5-D | | |
| Lab Sample ID: | MC125-3 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 81.7 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P53240.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.41 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~13.8~~ U | ~~5.7~~ 13.8 | 5.7 | ug/kg | U |
| 107-02-8 | Acrolein | ND | 28 | 19 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.7 | 2.3 | ug/kg | |
| 71-43-2 | Benzene | 0.71 | 0.57 | 0.14 | ug/kg | J |
| 108-86-1 | Bromobenzene | ND | 5.7 | 0.22 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.7 | 1.2 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.3 | 0.84 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.3 | 0.53 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.3 | 0.76 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.7 | 1.3 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.7 | 1.4 | ug/kg | UJ |
| 135-98-8 | sec-Butylbenzene | ND | 5.7 | 0.19 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.7 | 0.74 | ug/kg | |
| 75-15-0 | Carbon disulfide | 3.3 | 5.7 | 1.1 | ug/kg | J |
| 56-23-5 | Carbon tetrachloride | ND | 2.3 | 2.3 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.3 | 1.3 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.7 | 0.29 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.7 | 5.7 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.3 | 1.1 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.7 | 5.7 | ug/kg | UJ |
| 95-49-8 | o-Chlorotoluene | ND | 5.7 | 0.16 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.7 | 1.3 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.7 | 5.7 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.3 | 0.74 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.3 | 0.22 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.3 | 0.17 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.3 | 0.16 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.3 | 0.16 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.3 | 0.39 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.3 | 0.17 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.3 | 1.2 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.3 | 0.36 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte fonnd iu associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-17-18.5-D | | |
| Lab Sample ID: | MC125-3 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 81.7 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.3 | 0.31 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.3 | 1.1 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.3 | 0.26 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.7 | 1.3 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.7 | 0.21 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.7 | 0.22 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.3 | 1.1 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.3 | 0.77 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 28 | 28 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.7 | 3.5 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.3 | 0.15 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.7 | 5.7 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.7 | 5.7 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.7 | 0.18 | ug/kg | UJ |
| 99-87-6 | p-Isopropyltoluene | ND | 5.7 | 0.18 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.3 | 0.70 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.7 | 5.7 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.7 | 0.35 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.3 | 1.4 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.7 | 5.7 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.7 | 0.18 | ug/kg | UJ |
| 100-42-5 | Styrene | ND | 5.7 | 0.57 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.7 | 1.1 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.3 | 0.20 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.3 | 0.19 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.7 | 0.20 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.7 | 1.2 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.7 | 5.7 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.3 | 1.1 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.3 | 0.29 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.3 | 0.22 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.3 | 1.0 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.7 | 0.24 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.7 | 0.18 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.7 | 0.21 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.7 | 1.3 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.3 | 2.3 | ug/kg | |
| | m,p-Xylene | ND | 2.3 | 0.28 | ug/kg | UJ |
| 95-47-6 | o-Xylene | ND | 2.3 | 0.21 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.3 | 0.49 | ug/kg | UJ |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-17-18.5-D | | |
| Lab Sample ID: | MC125-3 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 81.7 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 111% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 119% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 105% | | 70-130% |

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-17-18.5-D | | |
| Lab Sample ID: | MC125-3 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 81.7 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | I72789.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 20.6 g | 1.0 ml |
| Run #2 | | |

**ABN Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | ND | 590 | 46 | ug/kg | |
| 95-57-8 | 2-Chlorophenol | ND | 300 | 16 | ug/kg | |
| 59-50-7 | 4-Chloro-3-methyl phenol | ND | 590 | 21 | ug/kg | |
| 120-83-2 | 2,4-Dichlorophenol | ND | 590 | 35 | ug/kg | |
| 105-67-9 | 2,4-Dimethylphenol | ND | 590 | 59 | ug/kg | |
| 51-28-5 | 2,4-Dinitrophenol | ND | 1200 | 300 | ug/kg | |
| 534-52-1 | 4,6-Dinitro-o-cresol | ND | 590 | 300 | ug/kg | |
| 95-48-7 | 2-Methylphenol | ND | 590 | 17 | ug/kg | |
| | 3&4-Methylphenol | ND | 590 | 31 | ug/kg | |
| 88-75-5 | 2-Nitrophenol | ND | 590 | 36 | ug/kg | |
| 100-02-7 | 4-Nitrophenol | ND | 1200 | 300 | ug/kg | |
| 87-86-5 | Pentachlorophenol | ND | 590 | 55 | ug/kg | |
| 108-95-2 | Phenol | ND | 300 | 49 | ug/kg | |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | 590 | 44 | ug/kg | |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | 590 | 41 | ug/kg | |
| 83-32-9 | Acenaphthene | ND | 300 | 25 | ug/kg | |
| 208-96-8 | Acenaphthylene | ND | 300 | 22 | ug/kg | |
| 62-53-3 | Aniline | ND | 590 | 590 | ug/kg | |
| 120-12-7 | Anthracene | ND | 300 | 23 | ug/kg | |
| 56-55-3 | Benzo(a)anthracene | ND | 300 | 11 | ug/kg | |
| 50-32-8 | Benzo(a)pyrene | ND | 300 | 18 | ug/kg | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 300 | 35 | ug/kg | |
| 191-24-2 | Benzo(g,h,i)perylene | ND | 300 | 19 | ug/kg | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 300 | 8.8 | ug/kg | |
| 101-55-3 | 4-Bromophenyl phenyl ether | ND | 300 | 24 | ug/kg | |
| 85-68-7 | Butyl benzyl phthalate | ND | 300 | 13 | ug/kg | |
| 100-51-6 | Benzyl Alcohol | ND | 590 | 36 | ug/kg | |
| 91-58-7 | 2-Chloronaphthalene | ND | 300 | 25 | ug/kg | |
| 106-47-8 | 4-Chloroaniline | ND | 590 | 150 | ug/kg | |
| 218-01-9 | Chrysene | ND | 300 | 9.7 | ug/kg | |
| 111-91-1 | bis(2-Chloroethoxy)methane | ND | 300 | 23 | ug/kg | |
| 111-44-4 | bis(2-Chloroethyl)ether | ND | 300 | 6.4 | ug/kg | |

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-17-18.5-D | | |
| Lab Sample ID: | MC125-3 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 81.7 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

ABN Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 108-60-1 | bis(2-Chloroisopropyl)ether | ND | 300 | 28 | ug/kg | |
| 7005-72-3 | 4-Chlorophenyl phenyl ether | ND | 300 | 27 | ug/kg | |
| 122-66-7 | 1,2-Diphenylhydrazine | ND | 300 | 25 | ug/kg | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | 590 | 150 | ug/kg | |
| 606-20-2 | 2,6-Dinitrotoluene | ND | 590 | 29 | ug/kg | |
| 91-94-1 | 3,3'-Dichlorobenzidine | ND | 300 | 7.1 | ug/kg | |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | 300 | 19 | ug/kg | |
| 132-64-9 | Dibenzofuran | ND | 300 | 25 | ug/kg | |
| 84-74-2 | Di-n-butyl phthalate | ND | 300 | 27 | ug/kg | |
| 117-84-0 | Di-n-octyl phthalate | ND | 300 | 16 | ug/kg | |
| 84-66-2 | Diethyl phthalate | ND | 300 | 26 | ug/kg | |
| 131-11-3 | Dimethyl phthalate | 23.8 | 300 | 21 | ug/kg | J |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | ND | 300 | 20 | ug/kg | |
| 206-44-0 | Fluoranthene | ND | 300 | 10 | ug/kg | |
| 86-73-7 | Fluorene | ND | 300 | 6.5 | ug/kg | |
| 118-74-1 | Hexachlorobenzene | ND | 300 | 26 | ug/kg | |
| 77-47-4 | Hexachlorocyclopentadiene | ND | 590 | 4.0 | ug/kg | |
| 67-72-1 | Hexachloroethane | ND | 300 | 24 | ug/kg | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 300 | 18 | ug/kg | |
| 78-59-1 | Isophorone | ND | 300 | 29 | ug/kg | |
| 90-12-0 | 1-Methylnaphthalene | ND | 300 | 300 | ug/kg | |
| 91-57-6 | 2-Methylnaphthalene | 78.4 | 300 | 25 | ug/kg | J |
| 88-74-4 | 2-Nitroaniline | ND | 590 | 150 | ug/kg | |
| 99-09-2 | 3-Nitroaniline | ND | 590 | 150 | ug/kg | |
| 100-01-6 | 4-Nitroaniline | ND | 590 | 22 | ug/kg | |
| 91-20-3 | Naphthalene | 29.0 | 300 | 6.9 | ug/kg | J |
| 98-95-3 | Nitrobenzene | ND | 300 | 8.8 | ug/kg | |
| 62-75-9 | n-Nitrosodimethylamine | ND | 300 | 24 | ng/kg | |
| 621-64-7 | N-Nitroso-di-n-propylamine | ND | 300 | 19 | ug/kg | |
| 86-30-6 | N-Nitrosodiphenylamine | ND | 300 | 16 | ug/kg | |
| 85-01-8 | Phenanthrene | ND | 300 | 7.7 | ng/kg | |
| 129-00-0 | Pyrene | ND | 300 | 9.6 | ug/kg | |
| 110-86-1 | Pyridine | ND | 590 | 590 | ug/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 84% | | 30-130% |
| 4165-62-2 | Phenol-d5 | 81% | | 30-130% |
| 118-79-6 | 2,4,6-Tribromophenol | 78% | | 30-130% |
| 4165-60-0 | Nitrobenzene-d5 | 77% | | 30-130% |

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J = Indicates an estimated value
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N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-17-18.5-D | | |
| Lab Sample ID: | MC125-3 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 81.7 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

ABN Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 321-60-8 | 2-Fluorobiphenyl | 79% | | 30-130% |
| 1718-51-0 | Terphenyl-d14 | 92% | | 30-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-30-31 | | |
| Lab Sample ID: | MC125-4 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 82.6 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P53245.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.94 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ~~20.8~~ U ~~6.1~~ 20.8 | | 6.1 | ug/kg | U |
| 107-02-8 | Acrolein | ND | 31 | 21 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6.1 | 2.5 | ug/kg | UJ |
| 71-43-2 | Benzene | 2.8 | 0.61 | 0.15 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 6.1 | 0.23 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6.1 | 1.3 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.5 | 0.90 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.5 | 0.58 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.5 | 0.83 | ug/kg | UJ |
| 78-93-3 | 2-Butanone (MEK) | ND | 6.1 | 1.5 | ug/kg | UJ |
| 104-51-8 | n-Butylbenzene | ND | 6.1 | 1.5 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 6.1 | 0.20 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 6.1 | 0.80 | ug/kg | |
| 75-15-0 | Carbon disulfide | 4.2 | 6.1 | 1.2 | ug/kg | J |
| 56-23-5 | Carbon tetrachloride | ND | 2.5 | 2.5 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.5 | 1.5 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6.1 | 0.32 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6.1 | 6.1 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.5 | 1.2 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6.1 | 6.1 | ug/kg | UJ |
| 95-49-8 | o-Chlorotoluene | ND | 6.1 | 0.17 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6.1 | 1.4 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6.1 | 6.1 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.5 | 0.80 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.5 | 0.23 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.5 | 0.18 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.5 | 0.18 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.5 | 0.17 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.5 | 0.42 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.5 | 0.19 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.5 | 1.3 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.5 | 0.39 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-30-31 | | |
| Lab Sample ID: | MC125-4 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 82.6 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.5 | 0.33 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.5 | 1.2 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.5 | 0.28 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6.1 | 1.4 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6.1 | 0.23 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6.1 | 0.24 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.5 | 1.2 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.5 | 0.84 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 31 | 31 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6.1 | 3.8 | ug/kg | |
| 100-41-4 | Ethylbenzene | 4.8 | 2.5 | 0.16 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 6.1 | 6.1 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6.1 | 6.1 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 6.1 | 0.19 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 6.1 | 0.20 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.5 | 0.76 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6.1 | 6.1 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6.1 | 0.37 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.5 | 1.5 | ug/kg | UJ |
| 91-20-3 | Naphthalene | ND | 6.1 | 6.1 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 3.0 | 6.1 | 0.20 | ug/kg | J |
| 100-42-5 | Styrene | ND | 6.1 | 0.61 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6.1 | 1.2 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.5 | 0.22 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.5 | 0.21 | ug/kg | |
| 108-88-3 | Toluene | 4.9 | 6.1 | 0.22 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorohenzene | ND | 6.1 | 1.4 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6.1 | 6.1 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.5 | 1.2 | ng/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.5 | 0.31 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.5 | 0.24 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.5 | 1.1 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6.1 | 0.26 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 1.6 | 6.1 | 0.19 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 6.1 | 0.22 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 6.1 | 1.4 | ug/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 2.5 | 2.5 | ug/kg | |
| | m,p-Xylene | 2.6 | 2.5 | 0.31 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.5 | 0.23 | ug/kg | |
| 1330-20-7 | Xylene (total) | 2.6 | 2.5 | 0.53 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-30-31 | | |
| Lab Sample ID: | MC125-4 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 82.6 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# I | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 117% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 125% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 109% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-30-31 | | |
| Lab Sample ID: | MC125-4 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 82.6 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | I72790.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |
| Run #2 | | | | | | | |

| | Initial Weigbt | Final Volume |
|---|---|---|
| Run #1 | 20.1 g | 1.0 ml |
| Run #2 | | |

ABN Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | ND | 600 | 47 | ug/kg | |
| 95-57-8 | 2-Chlorophenol | ND | 300 | 16 | ug/kg | |
| 59-50-7 | 4-Chloro-3-methyl phenol | ND | 600 | 21 | ug/kg | |
| 120-83-2 | 2,4-Dichlorophenol | ND | 600 | 35 | ug/kg | |
| 105-67-9 | 2,4-Dimethylphenol | ND | 600 | 60 | ug/kg | |
| 51-28-5 | 2,4-Dinitrophenol | ND | 1200 | 300 | ug/kg | |
| 534-52-1 | 4,6-Dinitro-o-cresol | ND | 600 | 300 | ug/kg | |
| 95-48-7 | 2-Methylphenol | ND | 600 | 17 | ug/kg | |
| | 3&4-Methylphenol | ND | 600 | 32 | ug/kg | |
| 88-75-5 | 2-Nitrophenol | ND | 600 | 36 | ug/kg | |
| 100-02-7 | 4-Nitrophenol | ND | 1200 | 300 | ug/kg | |
| 87-86-5 | Pentachlorophenol | ND | 600 | 56 | ug/kg | |
| 108-95-2 | Phenol | ND | 300 | 50 | ug/kg | |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | 600 | 45 | ug/kg | |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | 600 | 41 | ug/kg | |
| 83-32-9 | Acenaphthene | ND | 300 | 25 | ug/kg | |
| 208-96-8 | Acenaphthylene | ND | 300 | 23 | ug/kg | |
| 62-53-3 | Aniline | ND | 600 | 600 | ug/kg | |
| 120-12-7 | Anthracene | ND | 300 | 24 | ug/kg | |
| 56-55-3 | Benzo(a)anthracene | ND | 300 | 11 | ug/kg | |
| 50-32-8 | Benzo(a)pyrene | ND | 300 | 18 | ug/kg | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 300 | 35 | ug/kg | |
| 191-24-2 | Benzo(g,h,i)perylene | ND | 300 | 19 | ug/kg | |
| 207-08-9 | Benzo(k)flnoranthene | ND | 300 | 8.9 | ug/kg | |
| 101-55-3 | 4-Bromophenyl phenyl ether | ND | 300 | 24 | ug/kg | |
| 85-68-7 | Butyl benzyl phthalate | ND | 300 | 13 | ug/kg | |
| 100-51-6 | Benzyl Alcohol | ND | 600 | 37 | ug/kg | |
| 91-58-7 | 2-Chloronaphthalene | ND | 300 | 25 | ug/kg | |
| 106-47-8 | 4-Chloroaniline | ND | 600 | 150 | ug/kg | |
| 218-01-9 | Chrysene | ND | 300 | 9.8 | ug/kg | |
| 111-91-1 | bis(2-Chloroethoxy)methane | ND | 300 | 23 | ug/kg | |
| 111-44-4 | bis(2-Chloroethyl)ether | ND | 300 | 6.4 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated valne
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-30-31 | | |
| Lab Sample ID: | MC125-4 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 82.6 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

**ABN Special List**

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 108-60-1 | bis(2-Chloroisopropyl)ether | ND | 300 | 29 | ug/kg | |
| 7005-72-3 | 4-Chlorophenyl phenyl ether | ND | 300 | 27 | ug/kg | |
| 122-66-7 | 1,2-Diphenylhydrazine | ND | 300 | 25 | ug/kg | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | 600 | 150 | ug/kg | |
| 606-20-2 | 2,6-Dinitrotoluene | ND | 600 | 29 | ug/kg | |
| 91-94-1 | 3,3'-Dichlorobenzidine | ND | 300 | 7.2 | ug/kg | |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | 300 | 19 | ug/kg | |
| 132-64-9 | Dibenzofuran | ND | 300 | 26 | ug/kg | |
| 84-74-2 | Di-n-butyl phthalate | ND | 300 | 27 | ug/kg | |
| 117-84-0 | Di-n-octyl phthalate | ND | 300 | 16 | ug/kg | |
| 84-66-2 | Diethyl phthalate | ND | 300 | 26 | ug/kg | |
| 131-11-3 | Dimethyl phthalate | ND | 300 | 21 | ug/kg | |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 114 | 300 | 21 | ug/kg | J |
| 206-44-0 | Fluoranthene | ND | 300 | 10 | ug/kg | |
| 86-73-7 | Fluorene | ND | 300 | 6.6 | ug/kg | |
| 118-74-1 | Hexachlorobenzene | ND | 300 | 26 | ug/kg | |
| 77-47-4 | Hexachlorocyclopentadiene | ND | 600 | 4.1 | ug/kg | |
| 67-72-1 | Hexachloroethane | ND | 300 | 24 | ug/kg | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 300 | 18 | ug/kg | |
| 78-59-1 | Isophorone | ND | 300 | 30 | ug/kg | |
| 90-12-0 | 1-Methylnaphthalene | ND | 300 | 300 | ug/kg | |
| 91-57-6 | 2-Methylnaphthalene | ND | 300 | 25 | ug/kg | |
| 88-74-4 | 2-Nitroaniline | ND | 600 | 150 | ug/kg | |
| 99-09-2 | 3-Nitroaniline | ND | 600 | 150 | ug/kg | |
| 100-01-6 | 4-Nitroaniline | ND | 600 | 22 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 300 | 7.0 | ug/kg | |
| 98-95-3 | Nitrobenzene | ND | 300 | 8.9 | ug/kg | |
| 62-75-9 | n-Nitrosodimethylamine | ND | 300 | 25 | ug/kg | |
| 621-64-7 | N-Nitroso-di-n-propylamine | ND | 300 | 19 | ug/kg | |
| 86-30-6 | N-Nitrosodiphenylamine | ND | 300 | 16 | ug/kg | |
| 85-01-8 | Phenanthrene | ND | 300 | 7.8 | ug/kg | |
| 129-00-0 | Pyrene | ND | 300 | 9.7 | ug/kg | |
| 110-86-1 | Pyridine | ND | 600 | 600 | ug/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 69% | | 30-130% |
| 4165-62-2 | Phenol-d5 | 69% | | 30-130% |
| 118-79-6 | 2,4,6-Tribromophenol | 63% | | 30-130% |
| 4165-60-0 | Nitrobenzene-d5 | 59% | | 30-130% |

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-31-30-31 | | |
| Lab Sample ID: | MC125-4 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 82.6 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

ABN Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 321-60-8 | 2-Fluorobiphenyl | 62% | | 30-130% |
| 1718-51-0 | Terphenyl-d14 | 81% | | 30-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-32-10-12 | | |
| Lab Sample ID: | MC125-5 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 88.0 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P53246.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.07 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 7.0 | 7.0 | ug/kg | |
| 107-02-8 | Acrolein | ND | 35 | 24 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 7.0 | 2.8 | ug/kg | UJ |
| 71-43-2 | Benzene | ND | 0.70 | 0.17 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 7.0 | 0.27 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 7.0 | 1.4 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.8 | 1.0 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.8 | 0.66 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.8 | 0.94 | ug/kg | UJ |
| 78-93-3 | 2-Butanone (MEK) | ND | 7.0 | 1.7 | ug/kg | UJ |
| 104-51-8 | n-Butylbenzene | ND | 7.0 | 1.8 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 7.0 | 0.23 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 7.0 | 0.91 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 7.0 | 1.4 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.8 | 2.8 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.8 | 1.7 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 7.0 | 0.36 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 7.0 | 7.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.8 | 1.3 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 7.0 | 7.0 | ug/kg | UJ |
| 95-49-8 | o-Chlorotoluene | ND | 7.0 | 0.20 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 7.0 | 1.6 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 7.0 | 7.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.8 | 0.91 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.8 | 0.27 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.8 | 0.21 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.8 | 0.20 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.8 | 0.20 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.8 | 0.48 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.8 | 0.21 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.8 | 1.5 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.8 | 0.44 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates aualyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.5

| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-32-10-12 | | |
| Lab Sample ID: | MC125-5 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 88.0 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.8 | 0.38 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.8 | 1.4 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.8 | 0.32 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 7.0 | 1.6 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 7.0 | 0.26 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 7.0 | 0.27 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.8 | 1.4 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.8 | 0.96 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 35 | 35 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 7.0 | 4.3 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.8 | 0.18 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 7.0 | 7.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 7.0 | 7.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 7.0 | 0.22 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 7.0 | 0.23 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.8 | 0.86 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 7.0 | 7.0 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 7.0 | 0.43 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.8 | 1.7 | ug/kg | UJ |
| 91-20-3 | Naphthalene | ND | 7.0 | 7.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 7.0 | 0.23 | ug/kg | |
| 100-42-5 | Styrene | ND | 7.0 | 0.70 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 7.0 | 1.4 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.8 | 0.25 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.8 | 0.23 | ug/kg | |
| 108-88-3 | Toluene | ND | 7.0 | 0.25 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 7.0 | 1.5 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 7.0 | 7.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.8 | 1.4 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.8 | 0.36 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.8 | 0.27 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.8 | 1.3 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 7.0 | 0.29 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 7.0 | 0.22 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 7.0 | 0.25 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 7.0 | 1.6 | ug/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 2.8 | 2.8 | ug/kg | |
| | m,p-Xylene | ND | 2.8 | 0.35 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.8 | 0.26 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.8 | 0.61 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-32-10-12 | | |
| Lab Sample ID: | MC125-5 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 88.0 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

**VOA Special List**

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 117% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 121% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Iudicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-32-10-12 | | |
| Lab Sample ID: | MC125-5 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 88.0 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | I72791.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 20.5 g | 1.0 ml |
| Run #2 | | |

ABN Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | ND | 550 | 43 | ug/kg | |
| 95-57-8 | 2-Chlorophenol | ND | 280 | 15 | ug/kg | |
| 59-50-7 | 4-Chloro-3-methyl phenol | ND | 550 | 19 | ug/kg | |
| 120-83-2 | 2,4-Dichlorophenol | ND | 550 | 33 | ug/kg | |
| 105-67-9 | 2,4-Dimethylphenol | ND | 550 | 55 | ug/kg | |
| 51-28-5 | 2,4-Dinitrophenol | ND | 1100 | 280 | ug/kg | |
| 534-52-1 | 4,6-Dinitro-o-cresol | ND | 550 | 280 | ug/kg | |
| 95-48-7 | 2-Methylphenol | ND | 550 | 16 | ug/kg | |
| | 3&4-Methylphenol | ND | 550 | 29 | ug/kg | |
| 88-75-5 | 2-Nitrophenol | ND | 550 | 33 | ug/kg | |
| 100-02-7 | 4-Nitrophenol | ND | 1100 | 280 | ug/kg | |
| 87-86-5 | Pentachlorophenol | ND | 550 | 51 | ug/kg | |
| 108-95-2 | Phenol | ND | 280 | 46 | ug/kg | |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | 550 | 41 | ug/kg | |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | 550 | 38 | ug/kg | |
| 83-32-9 | Acenaphthene | ND | 280 | 23 | ug/kg | |
| 208-96-8 | Acenaphthylene | ND | 280 | 21 | ug/kg | |
| 62-53-3 | Aniline | ND | 550 | 550 | ug/kg | |
| 120-12-7 | Anthracene | ND | 280 | 22 | ug/kg | |
| 56-55-3 | Benzo(a)anthracene | ND | 280 | 10 | ug/kg | |
| 50-32-8 | Benzo(a)pyrene | ND | 280 | 17 | ug/kg | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 280 | 32 | ug/kg | |
| 191-24-2 | Benzo(g,h,i)perylene | ND | 280 | 18 | ug/kg | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 280 | 8.2 | ug/kg | |
| 101-55-3 | 4-Bromophenyl phenyl ether | ND | 280 | 23 | ug/kg | |
| 85-68-7 | Butyl benzyl phthalate | ND | 280 | 12 | ug/kg | |
| 100-51-6 | Benzyl Alcohol | ND | 550 | 34 | ug/kg | |
| 91-58-7 | 2-Chloronaphthalene | ND | 280 | 23 | ug/kg | |
| 106-47-8 | 4-Chloroaniline | ND | 550 | 140 | ug/kg | |
| 218-01-9 | Chrysene | ND | 280 | 9.0 | ug/kg | |
| 111-91-1 | bis(2-Chloroethoxy)methane | ND | 280 | 22 | ug/kg | |
| 111-44-4 | bis(2-Chloroethyl)ether | ND | 280 | 5.9 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-32-10-12 | | |
| Lab Sample ID: | MC125-5 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 88.0 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

ABN Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 108-60-1 | bis(2-Chloroisopropyl)ether | ND | 280 | 26 | ug/kg | |
| 7005-72-3 | 4-Chlorophenyl phenyl ether | ND | 280 | 25 | ug/kg | |
| 122-66-7 | 1,2-Diphenylhydrazine | ND | 280 | 23 | ug/kg | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | 550 | 140 | ug/kg | |
| 606-20-2 | 2,6-Dinitrotoluene | ND | 550 | 27 | ug/kg | |
| 91-94-1 | 3,3'-Dichlorobenzidine | ND | 280 | 6.6 | ug/kg | |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | 280 | 18 | ug/kg | |
| 132-64-9 | Dibenzofuran | ND | 280 | 24 | ug/kg | |
| 84-74-2 | Di-n-butyl phthalate | ND | 280 | 25 | ug/kg | |
| 117-84-0 | Di-n-octyl phthalate | ND | 280 | 15 | ug/kg | |
| 84-66-2 | Diethyl phthalate | ND | 280 | 24 | ug/kg | |
| 131-11-3 | Dimethyl phthalate | ND | 280 | 19 | ug/kg | |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 96.3 | 280 | 19 | ug/kg | J |
| 206-44-0 | Fluoranthene | ND | 280 | 9.4 | ug/kg | |
| 86-73-7 | Fluorene | ND | 280 | 6.1 | ug/kg | |
| 118-74-1 | Hexachlorobenzene | ND | 280 | 24 | ug/kg | |
| 77-47-4 | Hexachlorocyclopentadiene | ND | 550 | 3.7 | ug/kg | |
| 67-72-1 | Hexachloroethane | ND | 280 | 23 | ug/kg | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 280 | 17 | ug/kg | |
| 78-59-1 | Isophorone | ND | 280 | 27 | ug/kg | |
| 90-12-0 | 1-Methylnaphthalene | ND | 280 | 280 | ug/kg | |
| 91-57-6 | 2-Methylnaphthalene | ND | 280 | 23 | ug/kg | |
| 88-74-4 | 2-Nitroaniline | ND | 550 | 140 | ug/kg | |
| 99-09-2 | 3-Nitroaniline | ND | 550 | 140 | ug/kg | |
| 100-01-6 | 4-Nitroaniline | ND | 550 | 21 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 280 | 6.4 | ug/kg | |
| 98-95-3 | Nitrobenzene | ND | 280 | 8.2 | ug/kg | |
| 62-75-9 | n-Nitrosodimethylamine | ND | 280 | 23 | ug/kg | |
| 621-64-7 | N-Nitroso-di-n-propylamine | ND | 280 | 18 | ug/kg | |
| 86-30-6 | N-Nitrosodiphenylamine | ND | 280 | 15 | ug/kg | |
| 85-01-8 | Phenanthrene | ND | 280 | 7.1 | ug/kg | |
| 129-00-0 | Pyrene | ND | 280 | 8.9 | ug/kg | |
| 110-86-1 | Pyridine | ND | 550 | 550 | ug/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 71% | | 30-130% |
| 4165-62-2 | Phenol-d5 | 73% | | 30-130% |
| 118-79-6 | 2,4,6-Tribromophenol | 69% | | 30-130% |
| 4165-60-0 | Nitrobenzene-d5 | 62% | | 30-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-32-10-12 | | |
| Lab Sample ID: | MC125-5 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 88.0 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

ABN Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 321-60-8 | 2-Fluorobiphenyl | 69% | | 30-130% |
| 1718-51-0 | Terphenyl-d14 | 87% | | 30-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-32-21.5-22 | | |
| Lab Sample ID: | MC125-6 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 73.6 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P53247.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |
| Run #2 [a] | P53266.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 5.69 g | 5.0 ml |
| Run #2 | 5.10 g | 5.0 ml |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 6.0 | 6.0 | ug/kg | |
| 107-02-8 | Acrolein | ND | 30 | 20 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6.0 | 2.4 | ng/kg | UJ |
| 71-43-2 | Benzene | 17.8 | 0.60 | 0.15 | ug/kg | J |
| 108-86-1 | Bromobenzene | ND | 6.0 | 0.23 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6.0 | 1.2 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.4 | 0.88 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.4 | 0.56 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.4 | 0.81 | ug/kg | UJ |
| 78-93-3 | 2-Butanone (MEK) | ND | 6.0 | 1.4 | ug/kg | UJ |
| 104-51-8 | n-Butylbenzene | 10.3 | 6.0 | 1.5 | ug/kg | J |
| 135-98-8 | sec-Butylbenzene | 1.5 | 6.0 | 0.20 | ug/kg | J |
| 98-06-6 | tert-Butylbenzene | ND | 6.0 | 0.78 | ug/kg | |
| 75-15-0 | Carbon disulfide | 7.4 | 6.0 | 1.2 | ug/kg | J |
| 56-23-5 | Carbon tetrachloride | ND | 2.4 | 2.4 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.4 | 1.4 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6.0 | 0.31 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6.0 | 6.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.4 | 1.1 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6.0 | 6.0 | ug/kg | UJ |
| 95-49-8 | o-Chlorotoluene | ND | 6.0 | 0.17 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6.0 | 1.3 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6.0 | 6.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.4 | 0.78 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.4 | 0.23 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.4 | 0.18 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.4 | 0.17 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.4 | 0.17 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.4 | 0.41 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.4 | 0.18 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.4 | 1.3 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.4 | 0.38 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-32-21.5-22 | | |
| Lab Sample ID: | MC125-6 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 73.6 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.4 | 0.32 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.4 | 1.2 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.4 | 0.27 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6.0 | 1.4 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6.0 | 0.22 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6.0 | 0.23 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.4 | 1.2 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.4 | 0.82 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 30 | 30 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6.0 | 3.7 | ug/kg | |
| 100-41-4 | Ethylbenzene | 9.7 | 2.4 | 0.15 | ug/kg | J |
| 87-68-3 | Hexachlorobutadiene | ND | 6.0 | 6.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6.0 | 6.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 6.0 | 0.19 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 6.0 | 0.19 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.4 | 0.74 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6.0 | 6.0 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6.0 | 0.36 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.4 | 1.5 | ug/kg | UJ |
| 91-20-3 | Naphthalene | ND | 6.0 | 6.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | 1.6 | 6.0 | 0.19 | ug/kg | J |
| 100-42-5 | Styrene | ND | 6.0 | 0.60 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6.0 | 1.2 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.4 | 0.21 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.4 | 0.20 | ug/kg | |
| 108-88-3 | Toluene | 8.5 | 6.0 | 0.21 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6.0 | 1.3 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6.0 | 6.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.4 | 1.2 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.4 | 0.30 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.4 | 0.23 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.4 | 1.1 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6.0 | 0.25 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | 3.0 | 6.0 | 0.19 | ug/kg | J |
| 108-67-8 | 1,3,5-Trimethylbenzene | 1.6 | 6.0 | 0.22 | ug/kg | J |
| 108-05-4 | Viuyl Acetate | ND | 6.0 | 1.4 | ug/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 2.4 | 2.4 | ug/kg | |
| | m,p-Xylene | 7.2 | 2.4 | 0.30 | ug/kg | J |
| 95-47-6 | o-Xylene | 0.99 | 2.4 | 0.22 | ug/kg | J |
| 1330-20-7 | Xylene (total) | 7.2 | 2.4 | 0.52 | ug/kg | J |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-32-21.5-22 | | |
| Lab Sample ID: | MC125-6 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 73.6 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 118% | 121% | 70-130% |
| 2037-26-5 | Toluene-D8 | 133% [b] | 134% [b] | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 118% | 112% | 70-130% |

(a) Confirmation run for surrogate recoveries.
(b) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-32-21.5-22 | | |
| Lab Sample ID: | MC125-6 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 73.6 |
| Project: | URSMOSTL:Roxaua SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | I72792.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 20.3 g | 1.0 ml |
| Run #2 | | |

ABN Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | ND | 670 | 52 | ug/kg | |
| 95-57-8 | 2-Chlorophenol | ND | 340 | 18 | ug/kg | |
| 59-50-7 | 4-Chloro-3-methyl phenol | ND | 670 | 23 | ug/kg | |
| 120-83-2 | 2,4-Dichlorophenol | ND | 670 | 39 | ug/kg | |
| 105-67-9 | 2,4-Dimethylphenol | ND | 670 | 67 | ug/kg | |
| 51-28-5 | 2,4-Dinitrophenol | ND | 1300 | 340 | ug/kg | |
| 534-52-1 | 4,6-Dinitro-o-cresol | ND | 670 | 340 | ug/kg | |
| 95-48-7 | 2-Methylphenol | ND | 670 | 19 | ug/kg | |
| | 3&4-Methylphenol | ND | 670 | 35 | ug/kg | |
| 88-75-5 | 2-Nitrophenol | ND | 670 | 40 | ug/kg | |
| 100-02-7 | 4-Nitrophenol | ND | 1300 | 340 | ug/kg | |
| 87-86-5 | Pentachlorophenol | ND | 670 | 62 | ug/kg | |
| 108-95-2 | Phenol | ND | 340 | 56 | ug/kg | |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | 670 | 50 | ug/kg | |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | 670 | 46 | ug/kg | |
| 83-32-9 | Acenaphthene | ND | 340 | 28 | ug/kg | |
| 208-96-8 | Acenaphthylene | ND | 340 | 25 | ug/kg | |
| 62-53-3 | Aniline | ND | 670 | 670 | ug/kg | |
| 120-12-7 | Anthraceue | ND | 340 | 26 | ug/kg | |
| 56-55-3 | Benzo(a)anthracene | ND | 340 | 12 | ug/kg | |
| 50-32-8 | Benzo(a)pyrene | ND | 340 | 20 | ug/kg | |
| 205-99-2 | Benzo(b)fluorantheue | ND | 340 | 39 | ng/kg | |
| 191-24-2 | Benzo(g,h,i)perylene | ND | 340 | 22 | ug/kg | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 340 | 9.9 | ug/kg | |
| 101-55-3 | 4-Bromophenyl phenyl ether | ND | 340 | 27 | ug/kg | |
| 85-68-7 | Butyl benzyl phthalate | ND | 340 | 14 | ug/kg | |
| 100-51-6 | Benzyl Alcohol | ND | 670 | 41 | ug/kg | |
| 91-58-7 | 2-Chloronaphthalene | ND | 340 | 28 | ug/kg | |
| 106-47-8 | 4-Chloroaniline | ND | 670 | 170 | ug/kg | |
| 218-01-9 | Chrysene | ND | 340 | 11 | ug/kg | |
| 111-91-1 | bis(2-Chloroethoxy)methane | ND | 340 | 26 | ug/kg | |
| 111-44-4 | bis(2-Chloroethyl)ether | ND | 340 | 7.2 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-32-21.5-22 | | |
| Lab Sample ID: | MC125-6 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 73.6 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

ABN Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 108-60-1 | bis(2-Chloroisopropyl)ether | ND | 340 | 32 | ug/kg | |
| 7005-72-3 | 4-Chlorophenyl phenyl ether | ND | 340 | 30 | ug/kg | |
| 122-66-7 | 1,2-Diphenylhydrazine | ND | 340 | 28 | ug/kg | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | 670 | 170 | ug/kg | |
| 606-20-2 | 2,6-Dinitrotoluene | ND | 670 | 32 | ug/kg | |
| 91-94-1 | 3,3'-Dichlorobenzidine | ND | 340 | 8.1 | ug/kg | |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | 340 | 22 | ug/kg | |
| 132-64-9 | Dibenzofuran | ND | 340 | 29 | ug/kg | |
| 84-74-2 | Di-n-butyl phthalate | ND | 340 | 31 | ug/kg | |
| 117-84-0 | Di-n-octyl phthalate | ND | 340 | 18 | ug/kg | |
| 84-66-2 | Diethyl phthalate | ND | 340 | 29 | ug/kg | |
| 131-11-3 | Dimethyl phthalate | ND | 340 | 24 | ug/kg | |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | ND | 340 | 23 | ug/kg | |
| 206-44-0 | Fluoranthene | ND | 340 | 11 | ug/kg | |
| 86-73-7 | Fluorene | ND | 340 | 7.4 | ug/kg | |
| 118-74-1 | Hexachlorobenzene | ND | 340 | 29 | ug/kg | |
| 77-47-4 | Hexachlorocyclopentadiene | ND | 670 | 4.5 | ug/kg | |
| 67-72-1 | Hexachloroethane | ND | 340 | 27 | ug/kg | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 340 | 21 | ug/kg | |
| 78-59-1 | Isophorone | ND | 340 | 33 | ug/kg | |
| 90-12-0 | 1-Methylnaphthalene | ND | 340 | 340 | ug/kg | |
| 91-57-6 | 2-Methylnaphthalene | ND | 340 | 28 | ug/kg | |
| 88-74-4 | 2-Nitroaniline | ND | 670 | 170 | ug/kg | |
| 99-09-2 | 3-Nitroaniline | ND | 670 | 170 | ug/kg | |
| 100-01-6 | 4-Nitroaniline | ND | 670 | 25 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 340 | 7.8 | ug/kg | |
| 98-95-3 | Nitrobenzene | ND | 340 | 9.9 | ug/kg | |
| 62-75-9 | n-Nitrosodimethylamine | ND | 340 | 28 | ug/kg | |
| 621-64-7 | N-Nitroso-di-n-propylamine | ND | 340 | 21 | ug/kg | |
| 86-30-6 | N-Nitrosodiphenylamine | ND | 340 | 18 | ug/kg | |
| 85-01-8 | Phenanthrene | ND | 340 | 8.7 | ug/kg | |
| 129-00-0 | Pyrene | ND | 340 | 11 | ug/kg | |
| 110-86-1 | Pyridine | ND | 670 | 670 | ug/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 66% | | 30-130% |
| 4165-62-2 | Phenol-d5 | 64% | | 30-130% |
| 118-79-6 | 2,4,6-Tribromophenol | 65% | | 30-130% |
| 4165-60-0 | Nitrobenzene-d5 | 55% | | 30-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-32-21.5-22 | | |
| Lab Sample ID: | MC125-6 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 73.6 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

ABN Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 321-60-8 | 2-Fluorobiphenyl | 61% | | 30-130% |
| 1718-51-0 | Terphenyl-d14 | 80% | | 30-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found iu associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-32-30-31 | | |
| Lab Sample ID: | MC125-7 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 83.1 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P53248.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.30 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 7.0 | 7.0 | ug/kg | |
| 107-02-8 | Acrolein | ND | 35 | 24 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 7.0 | 2.8 | ug/kg | UJ |
| 71-43-2 | Benzene | 1.8 | 0.70 | 0.17 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 7.0 | 0.27 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 7.0 | 1.4 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.8 | 1.0 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.8 | 0.66 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.8 | 0.95 | ug/kg | UJ |
| 78-93-3 | 2-Butanone (MEK) | ND | 7.0 | 1.7 | ug/kg | UJ |
| 104-51-8 | n-Butylbenzene | ND | 7.0 | 1.8 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 7.0 | 0.23 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 7.0 | 0.91 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 7.0 | 1.4 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.8 | 2.8 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.8 | 1.7 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 7.0 | 0.36 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 7.0 | 7.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.8 | 1.3 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 7.0 | 7.0 | ug/kg | UJ |
| 95-49-8 | o-Chlorotoluene | ND | 7.0 | 0.20 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 7.0 | 1.6 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 7.0 | 7.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.8 | 0.91 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.8 | 0.27 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.8 | 0.21 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.8 | 0.20 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.8 | 0.20 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.8 | 0.48 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.8 | 0.21 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.8 | 1.5 | ng/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.8 | 0.44 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-32-30-31 | | |
| Lab Sample ID: | MC125-7 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 83.1 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.8 | 0.38 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.8 | 1.4 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.8 | 0.32 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 7.0 | 1.6 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 7.0 | 0.26 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 7.0 | 0.27 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.8 | 1.4 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.8 | 0.96 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 35 | 35 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 7.0 | 4.4 | ug/kg | |
| 100-41-4 | Ethylbenzene | 3.4 | 2.8 | 0.18 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 7.0 | 7.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 7.0 | 7.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 7.0 | 0.22 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 7.0 | 0.23 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.8 | 0.87 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 7.0 | 7.0 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 7.0 | 0.43 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.8 | 1.7 | ug/kg | UJ |
| 91-20-3 | Naphthalene | ND | 7.0 | 7.0 | ug/kg | |
| 103-65-1 | u-Propylbenzene | ND | 7.0 | 0.23 | ug/kg | |
| 100-42-5 | Styrene | ND | 7.0 | 0.70 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 7.0 | 1.4 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.8 | 0.25 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.8 | 0.24 | ug/kg | |
| 108-88-3 | Toluene | 3.9 | 7.0 | 0.25 | ug/kg | J |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 7.0 | 1.5 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 7.0 | 7.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.8 | 1.4 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.8 | 0.36 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.8 | 0.27 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.8 | 1.3 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 7.0 | 0.29 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 7.0 | 0.22 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 7.0 | 0.25 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 7.0 | 1.6 | ug/kg | UJ |
| 75-01-4 | Vinyl chloride | ND | 2.8 | 2.8 | ug/kg | |
| | m,p-Xylene | ND | 2.8 | 0.35 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.8 | 0.26 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.8 | 0.61 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-32-30-31 | | |
| Lab Sample ID: | MC125-7 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8260B | Percent Solids: | 83.1 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 115% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 125% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 105% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-32-30-31 | | |
| Lab Sample ID: | MC125-7 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 83.1 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | I72793.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 20.1 g | 1.0 ml |
| Run #2 | | |

ABN Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | ND | 600 | 47 | ug/kg | |
| 95-57-8 | 2-Chlorophenol | ND | 300 | 16 | ug/kg | |
| 59-50-7 | 4-Chloro-3-methyl phenol | ND | 600 | 21 | ug/kg | |
| 120-83-2 | 2,4-Dichlorophenol | ND | 600 | 35 | ug/kg | |
| 105-67-9 | 2,4-Dimethylphenol | ND | 600 | 60 | ug/kg | |
| 51-28-5 | 2,4-Dinitrophenol | ND | 1200 | 300 | ug/kg | |
| 534-52-1 | 4,6-Dinitro-o-cresol | ND | 600 | 300 | ug/kg | |
| 95-48-7 | 2-Methylphenol | ND | 600 | 17 | ug/kg | |
| | 3&4-Methylphenol | ND | 600 | 32 | ug/kg | |
| 88-75-5 | 2-Nitrophenol | ND | 600 | 36 | ug/kg | |
| 100-02-7 | 4-Nitrophenol | ND | 1200 | 300 | ug/kg | |
| 87-86-5 | Pentachlorophenol | ND | 600 | 56 | ug/kg | |
| 108-95-2 | Phenol | ND | 300 | 50 | ug/kg | |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | 600 | 45 | ug/kg | |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | 600 | 41 | ug/kg | |
| 83-32-9 | Acenaphthene | ND | 300 | 25 | ug/kg | |
| 208-96-8 | Acenaphthylene | ND | 300 | 23 | ug/kg | |
| 62-53-3 | Aniline | ND | 600 | 600 | ug/kg | |
| 120-12-7 | Anthracene | ND | 300 | 24 | ug/kg | |
| 56-55-3 | Benzo(a)anthracene | ND | 300 | 11 | ug/kg | |
| 50-32-8 | Benzo(a)pyrene | ND | 300 | 18 | ug/kg | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 300 | 35 | ug/kg | |
| 191-24-2 | Benzo(g,h,i)perylene | ND | 300 | 19 | ug/kg | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 300 | 8.9 | ug/kg | |
| 101-55-3 | 4-Bromophenyl phenyl ether | ND | 300 | 24 | ug/kg | |
| 85-68-7 | Butyl benzyl phthalate | ND | 300 | 13 | ug/kg | |
| 100-51-6 | Benzyl Alcohol | ND | 600 | 37 | ug/kg | |
| 91-58-7 | 2-Chloronaphthalene | ND | 300 | 25 | ug/kg | |
| 106-47-8 | 4-Chloroaniline | ND | 600 | 150 | ug/kg | |
| 218-01-9 | Chrysene | ND | 300 | 9.8 | ug/kg | |
| 111-91-1 | bis(2-Chloroethoxy)methane | ND | 300 | 23 | ug/kg | |
| 111-44-4 | bis(2-Chloroethyl)ether | ND | 300 | 6.4 | ug/kg | |

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E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-32-30-31 | | |
| Lab Sample ID: | MC125-7 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 83.1 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

ABN Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 108-60-1 | bis(2-Chloroisopropyl)ether | ND | 300 | 29 | ug/kg | |
| 7005-72-3 | 4-Chlorophenyl phenyl ether | ND | 300 | 27 | ug/kg | |
| 122-66-7 | 1,2-Diphenylhydrazine | ND | 300 | 25 | ug/kg | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | 600 | 150 | ug/kg | |
| 606-20-2 | 2,6-Dinitrotoluene | ND | 600 | 29 | ug/kg | |
| 91-94-1 | 3,3'-Dichlorobenzidine | ND | 300 | 7.2 | ug/kg | |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | 300 | 19 | ug/kg | |
| 132-64-9 | Dibenzofuran | ND | 300 | 26 | ug/kg | |
| 84-74-2 | Di-n-butyl phthalate | ND | 300 | 27 | ug/kg | |
| 117-84-0 | Di-n-octyl phthalate | ND | 300 | 16 | ug/kg | |
| 84-66-2 | Diethyl phthalate | ND | 300 | 26 | ug/kg | |
| 131-11-3 | Dimethyl phthalate | ND | 300 | 21 | ug/kg | |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | ND | 300 | 21 | ug/kg | |
| 206-44-0 | Fluoranthene | ND | 300 | 10 | ng/kg | |
| 86-73-7 | Fluorene | ND | 300 | 6.6 | ng/kg | |
| 118-74-1 | Hexachlorobenzene | ND | 300 | 26 | ug/kg | |
| 77-47-4 | Hexachlorocyclopentadiene | ND | 600 | 4.0 | ug/kg | |
| 67-72-1 | Hexachloroethane | ND | 300 | 24 | ug/kg | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 300 | 18 | ug/kg | |
| 78-59-1 | Isophorone | ND | 300 | 30 | ug/kg | |
| 90-12-0 | 1-Methylnaphthalene | ND | 300 | 300 | ug/kg | |
| 91-57-6 | 2-Methylnaphthalene | ND | 300 | 25 | ug/kg | |
| 88-74-4 | 2-Nitroaniline | ND | 600 | 150 | ug/kg | |
| 99-09-2 | 3-Nitroaniline | ND | 600 | 150 | ug/kg | |
| 100-01-6 | 4-Nitroaniline | ND | 600 | 22 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 300 | 7.0 | ug/kg | |
| 98-95-3 | Nitrobenzene | ND | 300 | 8.9 | ug/kg | |
| 62-75-9 | n-Nitrosodimethylamine | ND | 300 | 25 | ug/kg | |
| 621-64-7 | N-Nitroso-di-n-propylamine | ND | 300 | 19 | ug/kg | |
| 86-30-6 | N-Nitrosodiphenylamine | ND | 300 | 16 | ug/kg | |
| 85-01-8 | Phenanthrene | ND | 300 | 7.7 | ug/kg | |
| 129-00-0 | Pyrene | ND | 300 | 9.7 | ug/kg | |
| 110-86-1 | Pyridine | ND | 600 | 600 | ug/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 72% | | 30-130% |
| 4165-62-2 | Phenol-d5 | 71% | | 30-130% |
| 118-79-6 | 2,4,6-Tribromophenol | 65% | | 30-130% |
| 4165-60-0 | Nitrobenzene-d5 | 62% | | 30-130% |

ND = Not detected MDL - Method Detection Limit
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J = Indicates an estimated value
B = Indicates aualyte found iu associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | VMP-32-30-31 | | |
| Lab Sample ID: | MC125-7 | Date Sampled: | 05/10/11 |
| Matrix: | SO - Soil | Date Received: | 05/12/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 83.1 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

ABN Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 321-60-8 | 2-Fluorobiphenyl | 66% | | 30-130% |
| 1718-51-0 | Terphenyl-d14 | 78% | | 30-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

## Misc. Forms

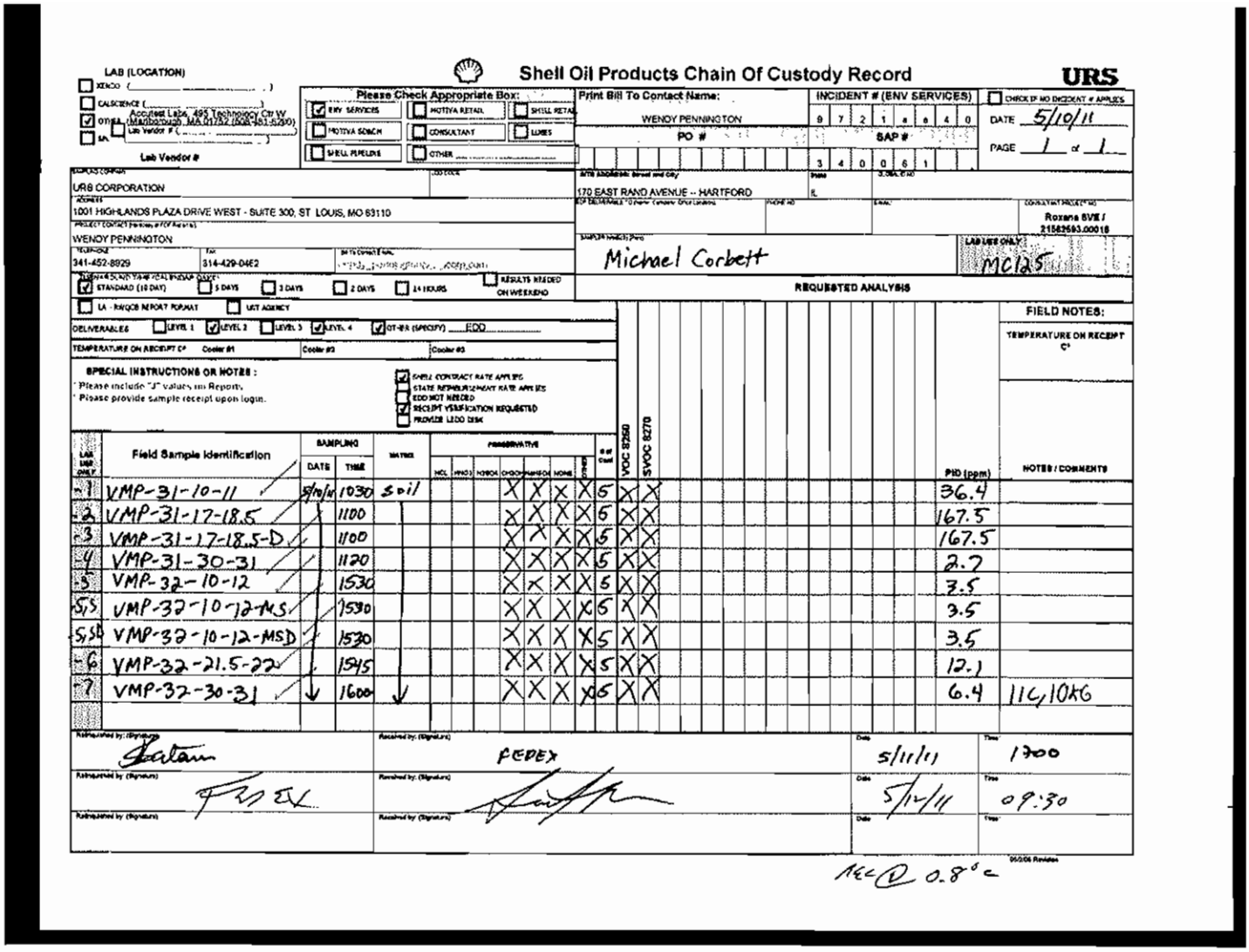
# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody

# Shell Oil Products Chain Of Custody Record

URS



LAB (LOCATION)
- [ ] XENCO ( )
- [ ] CALSCIENCE ( )
- [x] OTHER Accutest Labs, 495 Technology Ctr W (Marlborough, MA 01752 (508-481-6200))
- [ ] SA Lab Vendor # ( )

Lab Vendor #

Please Check Appropriate Box:
- [x] ENV SERVICES
- [ ] MOTIVA RETAIL
- [ ] SHELL RETAIL
- [ ] MOTIVA SOBCH
- [ ] CONSULTANT
- [ ] LUBES
- [ ] SHELL PIPELINE
- [ ] OTHER

Print Bill To Contact Name: WENDY PENNINGTON

PO #

INCIDENT # (ENV SERVICES): 9 7 2 1 a a 4 0

SAP #: 3 4 0 0 6 1

- [ ] CHECK IF NO INCIDENT # APPLIES

DATE 5/10/11

PAGE 1 of 1

SAMPLING COMPANY: URS CORPORATION

LOG CODE:

SITE ADDRESS: Street and City: 170 EAST RAND AVENUE -- HARTFORD

State: IL

COMPLETE ADDRESS: 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST LOUIS, MO 63110

PROJECT CONTACT (Name and/or Address): WENDY PENNINGTON

TELEPHONE: 341-452-8929

FAX: 314-429-0462

SITE CONTACT NAME: [illegible]

SAMPLER (Print): Michael Corbett

LAB USE ONLY: MC125

CONSULTANT PROJECT NO.: Roxana SVE / 21582593.00018

TURNAROUND TIME (CALENDAR DAYS):
- [x] STANDARD (10 DAY)
- [ ] 5 DAYS
- [ ] 3 DAYS
- [ ] 2 DAYS
- [ ] 24 HOURS
- [ ] RESULTS NEEDED ON WEEKEND

- [ ] LA - RWQCB REPORT FORMAT
- [ ] UST AGENCY

DELIVERABLES: [ ] LEVEL 1 [x] LEVEL 2 [ ] LEVEL 3 [x] LEVEL 4 [x] OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C°: Cooler #1 | Cooler #2 | Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
- Please include "J" values on Reports.
- Please provide sample receipt upon login.

- [x] SHELL CONTRACT RATE APPLIES
- [ ] STATE REIMBURSEMENT RATE APPLIES
- [ ] EDD NOT NEEDED
- [x] RECEIPT VERIFICATION REQUESTED
- [ ] PROVIDE LEDO DISK

REQUESTED ANALYSIS

FIELD NOTES:

TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | HCL | HNO3 | H2SO4 | CHOCH | MHSO4 | NONE | OTHER | # of Cont | VOC 8260 | SVOC 8270 | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | VMP-31-10-11 | 5/10/11 | 1030 | soil | | | | X | X | X | X | 5 | X | X | 36.4 | |
| -2 | VMP-31-17-18.5 | | 1100 | | | | | X | X | X | X | 5 | X | X | 167.5 | |
| -3 | VMP-31-17-18.5-D | | 1100 | | | | | X | X | X | X | 5 | X | X | 167.5 | |
| -4 | VMP-31-30-31 | | 1120 | | | | | X | X | X | X | 5 | X | X | 2.7 | |
| -5 | VMP-32-10-12 | | 1530 | | | | | X | X | X | X | 5 | X | X | 3.5 | |
| -5,S | VMP-32-10-12-MS | | 1530 | | | | | X | X | X | X | 5 | X | X | 3.5 | |
| -5,SD | VMP-32-10-12-MSD | | 1530 | | | | | X | X | X | X | 5 | X | X | 3.5 | |
| -6 | VMP-32-21.5-22 | | 1545 | | | | | X | X | X | X | 5 | X | X | 12.1 | |
| -7 | VMP-32-30-31 | | 1600 | | | | | X | X | X | X | 5 | X | X | 6.4 | 11C, 10KG |

| Relinquished by: (Signature) | Received by: (Signature) | Date | Time |
|---|---|---|---|
| [signature] | FEDEX | 5/11/11 | 1700 |
| FEDEX | [signature] | 5/12/11 | 09:30 |
| | | | |

REC @ 0.8°C

05/2/06 Revision

MC125: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC125 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 5/12/2011 Delivery Method: Client Service Action Required at Login: No

Project: 170 EAST RANDA VE HARTFORD No. Coolers: 1 Airbill #'s: N/A

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2. Custody Seals Intact: | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification: | Infered gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservatio | Y or N | N/A |
|---|---|---|
| 1. Trip Blank present / cooler: | ☐ ☐ | ☑ |
| 2. Trip Blank listed on COC: | ☐ ☐ | ☑ |
| 3. Samples preserved properly: | ☑ ☐ | |
| 4. VOCs headspace free: | ☑ ☐ | ☐ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles. | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree: | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1. Sample recvd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3 Condition of sample: | Intact |

| Sample Integrity - Instructions | Y or N | N/A |
|---|---|---|
| 1. Analysis requested is clear: | ☑ ☐ | |
| 2. Bottles received for unspecified tests | ☐ ☑ | |
| 3. Sufficient volume recvd for anelysis: | ☑ ☐ | |
| 4. Compositing instructions clear: | ☐ ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ ☐ | ☑ |

Comments

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC125

URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC125-1 Collected: 10-MAY-11 10:30 By: MC Received: 12-MAY-11 By: JB VMP-31-10-11 | | | | | | |
| MC125-1 | SM21 2540 B MOD. | 12-MAY-11 | CF | | | %SOL |
| MC125-1 | SW846 8270C | 24-MAY-11 14:38 | KR | 18-MAY-11 | FC | AB8270SL |
| MC125-1 | SW846 8260B | 24-MAY-11 19:27 | AMY | | | V8260SL |
| MC125-2 Collected: 10-MAY-11 11:00 By: MC Received: 12-MAY-11 By: JB VMP-31-17-18.5 | | | | | | |
| MC125-2 | SM21 2540 B MOD. | 12-MAY-11 | CF | | | %SOL |
| MC125-2 | SW846 8260B | 24-MAY-11 07:24 | AMY | | | V8260SL |
| MC125-2 | SW846 8270C | 24-MAY-11 15:10 | KR | 18-MAY-11 | FC | AB8270SL |
| MC125-3 Collected: 10-MAY-11 11:00 By: MC Received: 12-MAY-11 By: JB VMP-31-17-18.5-D | | | | | | |
| MC125-3 | SM21 2540 B MOD. | 12-MAY-11 | CF | | | %SOL |
| MC125-3 | SW846 8260B | 24-MAY-11 07:52 | AMY | | | V8260SL |
| MC125-3 | SW846 8270C | 24-MAY-11 15:43 | KR | 18-MAY-11 | FC | AB8270SL |
| MC125-4 Collected: 10-MAY-11 11:20 By: MC Received: 12-MAY-11 By: JB VMP-31-30-31 | | | | | | |
| MC125-4 | SM21 2540 B MOD. | 12-MAY-11 | CF | | | %SOL |
| MC125-4 | SW846 8260B | 24-MAY-11 10:11 | AMY | | | V8260SL |
| MC125-4 | SW846 8270C | 24-MAY-11 16:15 | KR | 18-MAY-11 | FC | AB8270SL |
| MC125-5 Collected: 10-MAY-11 15:30 By: MC Received: 12-MAY-11 By: JB VMP-32-10-12 | | | | | | |
| MC125-5 | SM21 2540 B MOD. | 12-MAY-11 | CF | | | %SOL |
| MC125-5 | SW846 8260B | 24-MAY-11 10:39 | AMY | | | V8260SL |
| MC125-5 | SW846 8270C | 24-MAY-11 16:47 | KR | 18-MAY-11 | FC | AB8270SL |
| MC125-6 Collected: 10-MAY-11 15:45 By: MC Received: 12-MAY-11 By: JB VMP-32-21.5-22 | | | | | | |
| MC125-6 | SM21 2540 B MOD. | 16-MAY-11 | SA | | | %SOL |
| MC125-6 | SW846 8260B | 24-MAY-11 11:07 | AMY | | | V8260SL |

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC125

URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC125-6 | SW846 8270C | 24-MAY-11 17:19 | KR | 18-MAY-11 | FC | AB8270SL |
| MC125-6 | SW846 8260B | 24-MAY-11 19:55 | AMY | | | V8260SL |
| MC125-7 Collected: 10-MAY-11 16:00 By: MC Received: 12-MAY-11 By: JB<br>VMP-32-30-31 | | | | | | |
| MC125-7 | SM21 2540 B MOD. | 16-MAY-11 | SA | | | %SOL |
| MC125-7 | SW846 8260B | 24-MAY-11 11:35 | AMY | | | V8260SL |
| MC125-7 | SW846 8270C | 24-MAY-11 17:51 | KR | 18-MAY-11 | FC | AB8270SL |

# Accutest Internal Chain of Custody



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL
Received: 05/12/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC125-1.1 | Walk In Ref #9 | Crystall Woodruff | 05/12/11 17:01 | Retrieve from Storage |
| MC125-1.1 | Crystall Woodruff | Walk In Ref #9 | 05/12/11 17:37 | Return to Storage |
| MC125-1.2 | Walk In Ref #9 | Michael Rolo | 05/18/11 16:09 | Retrieve from Storage |
| MC125-1.2 | Michael Rolo | Walk In Ref #9 | 05/18/11 22:38 | Return to Storage |
| MC125-1.3 | VOC Ref #10 | Amy Min Yang | 05/24/11 15:11 | Retrieve from Storage |
| MC125-1.3 | Amy Min Yang | GCMSP | 05/24/11 15:12 | Load on Instrument |
| MC125-1.3 | GCMSP | Amy Min Yang | 05/26/11 06:52 | Unload from Instrument |
| MC125-1.3 | Amy Min Yang | VOC Ref #10 | 05/26/11 06:52 | Return to Storage |
| MC125-1.4 | VOC Ref #10 | Amy Min Yang | 05/23/11 17:21 | Retrieve from Storage |
| MC125-1.4 | Amy Min Yang | GCMSP | 05/23/11 17:21 | Load on Instrument |
| MC125-1.4 | GCMSP | Amy Min Yang | 05/26/11 06:52 | Unload from Instrument |
| MC125-1.4 | Amy Min Yang | VOC Ref #10 | 05/26/11 06:52 | Return to Storage |
| MC125-1.5 | VOC Ref #10 | Gary Krasinski | 05/13/11 11:15 | Retrieve from Storage |
| MC125-1.5 | Gary Krasinski | VOC Ref #10 | 05/16/11 13:10 | Return to Storage |
| MC125-2.1 | Walk In Ref #9 | Crystall Woodruff | 05/12/11 17:01 | Retrieve from Storage |
| MC125-2.1 | Crystall Woodruff | Walk In Ref #9 | 05/12/11 17:37 | Return to Storage |
| MC125-2.2 | Walk In Ref #9 | Michael Rolo | 05/18/11 16:09 | Retrieve from Storage |
| MC125-2.2 | Michael Rolo | Walk In Ref #9 | 05/18/11 22:38 | Return to Storage |
| MC125-2.4 | VOC Ref #10 | Amy Min Yang | 05/23/11 17:21 | Retrieve from Storage |
| MC125-2.4 | Amy Min Yang | GCMSP | 05/23/11 17:21 | Load on Instrument |
| MC125-2.4 | GCMSP | Amy Min Yang | 05/26/11 06:52 | Unload from Instrument |
| MC125-2.4 | Amy Min Yang | VOC Ref #10 | 05/26/11 06:52 | Return to Storage |
| MC125-2.5 | VOC Ref #10 | Gary Krasinski | 05/13/11 11:15 | Retrieve from Storage |
| MC125-2.5 | Gary Krasinski | VOC Ref #10 | 05/16/11 13:10 | Return to Storage |
| MC125-3.1 | Walk In Ref #9 | Crystall Woodruff | 05/12/11 17:01 | Retrieve from Storage |
| MC125-3.1 | Crystall Woodruff | Walk In Ref #9 | 05/12/11 17:37 | Return to Storage |
| MC125-3.2 | Walk In Ref #9 | Michael Rolo | 05/18/11 16:09 | Retrieve from Storage |
| MC125-3.2 | Michael Rolo | Walk In Ref #9 | 05/18/11 22:38 | Return to Storage |
| MC125-3.3 | VOC Ref #10 | Amy Min Yang | 05/23/11 17:21 | Retrieve from Storage |
| MC125-3.3 | Amy Min Yang | GCMSP | 05/23/11 17:21 | Load on Instrument |
| MC125-3.3 | GCMSP | Amy Min Yang | 05/26/11 06:52 | Unload from Instrument |
| MC125-3.3 | Amy Min Yang | VOC Ref #10 | 05/26/11 06:52 | Return to Storage |

# Accutest Internal Chain of Custody

Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL
Received: 05/12/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC125-3.5 | VOC Ref #10 | Gary Krasinski | 05/13/11 11:15 | Retrieve from Storage |
| MC125-3.5 | Gary Krasinski | VOC Ref #10 | 05/16/11 13:10 | Return to Storage |
| MC125-4.1 | Walk In Ref #9 | Crystall Woodruff | 05/12/11 17:01 | Retrieve from Storage |
| MC125-4.1 | Crystall Woodruff | Walk In Ref #9 | 05/12/11 17:37 | Return to Storage |
| MC125-4.2 | Walk In Ref #9 | Michael Rolo | 05/18/11 16:09 | Retrieve from Storage |
| MC125-4.2 | Michael Rolo | Walk In Ref #9 | 05/18/11 22:38 | Return to Storage |
| MC125-4.3 | VOC Ref #10 | Amy Min Yang | 05/23/11 17:21 | Retrieve from Storage |
| MC125-4.3 | Amy Min Yang | GCMSP | 05/23/11 17:21 | Load on Instrument |
| MC125-4.3 | GCMSP | Amy Min Yang | 05/26/11 06:52 | Unload from Instrument |
| MC125-4.3 | Amy Min Yang | VOC Ref #10 | 05/26/11 06:52 | Return to Storage |
| MC125-4.5 | VOC Ref #10 | Gary Krasinski | 05/13/11 11:15 | Retrieve from Storage |
| MC125-4.5 | Gary Krasinski | VOC Ref #10 | 05/16/11 13:10 | Return to Storage |
| MC125-5.1 | Walk In Ref #9 | Crystall Woodruff | 05/12/11 17:01 | Retrieve from Storage |
| MC125-5.1 | Crystall Woodruff | Walk In Ref #9 | 05/12/11 17:37 | Return to Storage |
| MC125-5.2 | Walk In Ref #9 | Michael Rolo | 05/18/11 16:09 | Retrieve from Storage |
| MC125-5.2 | Michael Rolo | Walk In Ref #9 | 05/18/11 22:38 | Return to Storage |
| MC125-5.7 | VOC Ref #10 | Amy Min Yang | 05/23/11 17:21 | Retrieve from Storage |
| MC125-5.7 | Amy Min Yang | GCMSP | 05/23/11 17:21 | Load on Instrument |
| MC125-5.7 | GCMSP | Amy Min Yang | 05/26/11 06:52 | Unload from Instrument |
| MC125-5.7 | Amy Min Yang | VOC Ref #10 | 05/26/11 06:52 | Return to Storage |
| MC125-5.8 | VOC Ref #10 | Amy Min Yang | 05/23/11 17:21 | Retrieve from Storage |
| MC125-5.8 | Amy Min Yang | GCMSP | 05/23/11 17:21 | Load on Instrument |
| MC125-5.8 | GCMSP | Amy Min Yang | 05/26/11 06:52 | Unload from Instrument |
| MC125-5.8 | Amy Min Yang | VOC Ref #10 | 05/26/11 06:52 | Return to Storage |
| MC125-5.9 | VOC Ref #10 | Amy Min Yang | 05/23/11 17:21 | Retrieve from Storage |
| MC125-5.9 | Amy Min Yang | GCMSP | 05/23/11 17:21 | Load on Instrument |
| MC125-5.9 | GCMSP | Amy Min Yang | 05/26/11 06:52 | Unload from Instrument |
| MC125-5.9 | Amy Min Yang | VOC Ref #10 | 05/26/11 06:52 | Return to Storage |
| MC125-5.15 | VOC Ref #10 | Gary Krasinski | 05/13/11 11:15 | Retrieve from Storage |
| MC125-5.15 | Gary Krasinski | VOC Ref #10 | 05/16/11 13:10 | Return to Storage |
| MC125-6.1 | Walk In Ref #9 | Michael Rolo | 05/18/11 16:09 | Retrieve from Storage |
| MC125-6.1 | Michael Rolo | Walk In Ref #9 | 05/18/11 22:38 | Return to Storage |

# Accutest Internal Chain of Custody



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL
Received: 05/12/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC125-6.3 | VOC Ref #10 | Amy Min Yang | 05/23/11 17:21 | Retrieve from Storage |
| MC125-6.3 | Amy Min Yang | GCMSP | 05/23/11 17:21 | Load on Instrument |
| MC125-6.3 | GCMSP | Amy Min Yang | 05/26/11 06:52 | Unload from Instrument |
| MC125-6.3 | Amy Min Yang | VOC Ref #10 | 05/26/11 06:52 | Return to Storage |
| MC125-6.4 | VOC Ref #10 | Amy Min Yang | 05/24/11 17:01 | Retrieve from Storage |
| MC125-6.4 | Amy Min Yang | GCMSP | 05/24/11 17:01 | Load on Instrument |
| MC125-6.4 | GCMSP | Amy Min Yang | 05/26/11 06:52 | Unload from Instrument |
| MC125-6.4 | Amy Min Yang | VOC Ref #10 | 05/26/11 06:52 | Return to Storage |
| MC125-6.5 | VOC Ref #10 | Gary Krasinski | 05/13/11 11:15 | Retrieve from Storage |
| MC125-6.5 | Gary Krasinski | VOC Ref #10 | 05/16/11 13:10 | Return to Storage |
| MC125-7.1 | Walk In Ref #9 | Michael Rolo | 05/18/11 16:09 | Retrieve from Storage |
| MC125-7.1 | Michael Rolo | Walk In Ref #9 | 05/18/11 22:38 | Return to Storage |
| MC125-7.4 | VOC Ref #10 | Amy Min Yang | 05/23/11 17:21 | Retrieve from Storage |
| MC125-7.4 | Amy Min Yang | GCMSP | 05/23/11 17:21 | Load on Instrument |
| MC125-7.4 | GCMSP | Amy Min Yang | 05/26/11 06:52 | Unload from Instrument |
| MC125-7.4 | Amy Min Yang | VOC Ref #10 | 05/26/11 06:52 | Return to Storage |
| MC125-7.5 | VOC Ref #10 | Gary Krasinski | 05/13/11 11:15 | Retrieve from Storage |
| MC125-7.5 | Gary Krasinski | VOC Ref #10 | 05/16/11 13:10 | Return to Storage |

New England ACCUTEST LABORATORIES



# QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1766-MB | P53237.D | 1 | 05/23/11 | AMY | n/a | n/a | MSP1766 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC125-2, MC125-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 5.0 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.74 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 2.0 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 1.2 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.96 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 5.0 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethaue | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobeuzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 1.1 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.99 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1766-MB | P53237.D | 1 | 05/23/11 | AMY | n/a | n/a | MSP1766 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC125-2, MC125-3

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 5.0 | ug/kg | |
| 98-82-8 | Isopropylbenzeue | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 5.0 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 1.2 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.97 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 2.0 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.44 | ng/kg | |

# Method Blank Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1766-MB | P53237.D | 1 | 05/23/11 | AMY | n/a | n/a | MSP1766 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC125-2, MC125-3

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 117% | 70-130% |
| 2037-26-5 | Toluene-D8 | 121% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 99% | 70-130% |

# Method Blank Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1766-MB1 | P53244.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC125-1, MC125-4, MC125-5, MC125-6, MC125-7

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 5.0 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.74 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 2.0 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 1.2 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.96 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 5.0 | ug/kg | |
| 95-49-8 | o-Chlorotolnene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 1.1 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.99 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1766-MB1 | P53244.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC125-1, MC125-4, MC125-5, MC125-6, MC125-7

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 5.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 5.0 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 1.2 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.97 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 2.0 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.44 | ug/kg | |

# Method Blank Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1766-MB1 | P53244.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC125-1, MC125-4, MC125-5, MC125-6, MC125-7

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 112% | 70-130% |
| 2037-26-5 | Toluene-D8 | 122% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 100% | 70-130% |

# Blank Spike Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1766-BS | P53235.D | 1 | 05/23/11 | AMY | n/a | n/a | MSP1766 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC125-2, MC125-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 44.0 | 88 | 70-130 |
| 107-02-8 | Acrolein | 250 | 601 | 240* [a] | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 43.1 | 86 | 70-130 |
| 71-43-2 | Benzene | 50 | 53.0 | 106 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 57.9 | 116 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 57.3 | 115 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 57.4 | 115 | 70-130 |
| 75-25-2 | Bromoform | 50 | 64.6 | 129 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 40.8 | 82 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 44.2 | 88 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 59.6 | 119 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 58.8 | 118 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 58.4 | 117 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 47.8 | 96 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 58.8 | 118 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 58.4 | 117 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 53.8 | 108 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 67.5 | 135 | 10-160 |
| 67-66-3 | Chloroform | 50 | 51.2 | 102 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 34.4 | 69* [b] | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 53.8 | 108 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 58.3 | 117 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 59.9 | 120 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 60.7 | 121 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 58.9 | 118 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 57.6 | 115 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 58.2 | 116 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 57.7 | 115 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 52.0 | 104 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 46.4 | 93 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 53.8 | 108 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 51.1 | 102 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 51.0 | 102 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 49.9 | 100 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 47.8 | 96 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 55.2 | 110 | 70-130 |

# Blank Spike Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1766-BS | P53235.D | 1 | 05/23/11 | AMY | n/a | n/a | MSP1766 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC125-2, MC125-3

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 62.0 | 124 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 54.5 | 109 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 54.5 | 109 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 60.6 | 121 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 255 | 102 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 52.7 | 105 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 58.3 | 117 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 60.0 | 120 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 47.8 | 96 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 63.9 | 128 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 59.5 | 119 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 58.5 | 117 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 47.8 | 96 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 57.0 | 114 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 51.3 | 103 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 72.3 | 145* b | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 55.9 | 112 | 70-130 |
| 100-42-5 | Styrene | 50 | 66.3 | 133* b | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 60.2 | 120 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 48.9 | 98 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 62.2 | 124 | 70-130 |
| 108-88-3 | Toluene | 50 | 58.6 | 117 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 79.1 | 158* b | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 64.5 | 129 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 52.6 | 105 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 54.4 | 109 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 58.1 | 116 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 54.0 | 108 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 52.0 | 104 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 60.8 | 122 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 58.8 | 118 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 42.8 | 86 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 51.4 | 103 | 70-130 |
| | m,p-Xylene | 100 | 123 | 123 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 62.1 | 124 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 186 | 124 | 70-130 |

# Blank Spike Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1766-BS | P53235.D | 1 | 05/23/11 | AMY | n/a | n/a | MSP1766 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC125-2, MC125-3

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 112% | 70-130% |
| 2037-26-5 | Toluene-D8 | 119% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits. Blank Spike meets program technical requirements.

# Blank Spike Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1766-BS1 | P53242.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC125-1, MC125-4, MC125-5, MC125-6, MC125-7

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 37.5 | 75 | 70-130 |
| 107-02-8 | Acrolein | 250 | 641 | 256* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 29.4 | 59* b | 70-130 |
| 71-43-2 | Benzene | 50 | 40.5 | 81 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 47.3 | 95 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 44.4 | 89 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 45.6 | 91 | 70-130 |
| 75-25-2 | Bromoform | 50 | 54.1 | 108 | 70-130 |
| 74-83-9 | Bromomethane | 50 | 33.9 | 68* b | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 34.6 | 69* b | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 48.3 | 97 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 46.4 | 93 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 46.0 | 92 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 37.4 | 75 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 47.6 | 95 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 48.5 | 97 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 40.1 | 80 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 39.0 | 78 | 10-160 |
| 67-66-3 | Chloroform | 50 | 39.6 | 79 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 27.3 | 55* b | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 42.2 | 84 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 46.4 | 93 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 48.1 | 96 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 51.9 | 104 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 48.3 | 97 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 46.6 | 93 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 46.6 | 93 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 46.6 | 93 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 40.3 | 81 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 35.5 | 71 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 44.7 | 89 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 39.6 | 79 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroetheue | 50 | 39.3 | 79 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 39.3 | 79 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 36.3 | 73 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 44.7 | 89 | 70-130 |

# Blank Spike Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1766-BS1 | P53242.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC125-1, MC125-4, MC125-5, MC125-6, MC125-7

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 52.4 | 105 | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 43.6 | 87 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 43.1 | 86 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 49.1 | 98 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 194 | 78 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 43.4 | 87 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 48.2 | 96 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 51.3 | 103 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 42.7 | 85 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 51.2 | 102 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 47.5 | 95 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 47.3 | 95 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 37.5 | 75 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 44.9 | 90 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 33.8 | 68* b | 70-130 |
| 91-20-3 | Naphthalene | 50 | 56.3 | 113 | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 43.8 | 88 | 70-130 |
| 100-42-5 | Styrene | 50 | 54.4 | 109 | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 50.6 | 101 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 37.1 | 74 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 53.1 | 106 | 70-130 |
| 108-88-3 | Toluene | 50 | 46.2 | 92 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 63.1 | 126 | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 55.4 | 111 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 42.5 | 85 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 41.9 | 84 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 45.5 | 91 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 43.6 | 87 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 39.9 | 80 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 48.5 | 97 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 45.6 | 91 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 34.7 | 69* b | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 39.9 | 80 | 70-130 |
| | m,p-Xylene | 100 | 102 | 102 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 52.4 | 105 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 155 | 103 | 70-130 |

# Blank Spike Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1766-BS1 | P53242.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC125-1, MC125-4, MC125-5, MC125-6, MC125-7

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 107% | 70-130% |
| 2037-26-5 | Toluene-D8 | 116% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.
(b) Outside control limits. Blank Spike meets program technical requirements.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC125-5MS | P53249.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |
| MC125-5MSD | P53250.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |
| MC125-5 | P53246.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC125-1, MC125-2, MC125-3, MC125-4, MC125-5, MC125-6, MC125-7

| CAS No. | Compound | MC125-5 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | | 57.2 | 33.3 | 58* a | 31.6 | 51* a | 5 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 286 | 249 | 87 | 151 | 48* a | 49* b | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 57.2 | 47.2 | 83 | 52.3 | 84 | 10 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 57.2 | 50.3 | 88 | 57.4 | 92 | 13 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 57.2 | 39.6 | 69* a | 58.8 | 94 | 39* b | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 57.2 | 56.5 | 99 | 67.5 | 108 | 18 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 57.2 | 53.8 | 94 | 65.5 | 105 | 20 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 57.2 | 56.3 | 98 | 80.3 | 129 | 35* b | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 57.2 | 39.9 | 70 | 46.5 | 74 | 15 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 57.2 | 35.1 | 61* a | 42.6 | 68* a | 19 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 57.2 | 40.1 | 70 | 55.1 | 88 | 32* b | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 57.2 | 43.5 | 76 | 58.2 | 93 | 29 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 57.2 | 43.8 | 77 | 59.8 | 96 | 31* b | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 57.2 | 67.9 | 119 | 53.1 | 85 | 24 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 57.2 | 58.3 | 102 | 68.3 | 109 | 16 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 57.2 | 46.6 | 82 | 61.1 | 98 | 27 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 57.2 | 52.8 | 92 | 56.7 | 91 | 7 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 57.2 | ND | 0* a | ND | 0* a | nc | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 57.2 | 49.7 | 87 | 56.2 | 90 | 12 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 57.2 | 31.9 | 56* a | 39.6 | 63* a | 22 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 57.2 | 37.2 | 65* a | 52.5 | 84 | 34* b | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 57.2 | 37.8 | 66* a | 54.1 | 87 | 35* b | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 57.2 | 45.1 | 79 | 75.8 | 121 | 51* b | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 57.2 | 57.3 | 100 | 73.0 | 117 | 24 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 57.2 | 56.4 | 99 | 71.5 | 115 | 24 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 57.2 | 31.9 | 56* a | 54.3 | 87 | 52* b | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 57.2 | 33.4 | 58* a | 51.8 | 83 | 43* b | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 57.2 | 31.9 | 56* a | 51.2 | 82 | 46* b | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 57.2 | 53.3 | 93 | 55.2 | 88 | 4 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 57.2 | 46.5 | 81 | 51.3 | 82 | 10 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 57.2 | 54.0 | 94 | 64.1 | 103 | 17 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 57.2 | 52.7 | 92 | 59.8 | 96 | 13 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 57.2 | 48.5 | 85 | 54.8 | 88 | 12 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 57.2 | 49.3 | 86 | 54.6 | 87 | 10 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 57.2 | 45.0 | 79 | 52.5 | 84 | 15 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 57.2 | 52.5 | 92 | 65.8 | 105 | 22 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC125-5MS | P53249.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |
| MC125-5MSD | P53250.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |
| MC125-5 | P53246.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC125-1, MC125-2, MC125-3, MC125-4, MC125-5, MC125-6, MC125-7

| CAS No. | Compound | MC125-5 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 57.2 | 71.9 | 126 | 75.5 | 121 | 5 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 57.2 | 51.7 | 90 | 60.6 | 97 | 16 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 57.2 | 46.8 | 82 | 58.1 | 93 | 22 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 57.2 | 49.7 | 87 | 67.3 | 108 | 30 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 286 | 439 | 154* a | 411 | 132* a | 7 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 57.2 | 52.8 | 92 | 66.0 | 106 | 22 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 57.2 | 49.0 | 86 | 62.0 | 99 | 23 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 57.2 | 37.7 | 66* a | 57.7 | 92 | 42* b | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 57.2 | 45.3 | 79 | 51.1 | 82 | 12 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 57.2 | 52.0 | 91 | 67.0 | 107 | 25 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 57.2 | 41.2 | 72 | 57.5 | 92 | 33* b | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 57.2 | 65.2 | 114 | 73.3 | 117 | 12 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 57.2 | 56.3 | 98 | 67.0 | 107 | 17 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 57.2 | 56.4 | 99 | 69.3 | 111 | 21 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 57.2 | 41.3 | 72 | 47.2 | 76 | 13 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 57.2 | 22.2 | 39* a | 59.9 | 96 | 92* b | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 57.2 | 41.3 | 72 | 54.5 | 87 | 28 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 57.2 | 39.4 | 69* a | 61.1 | 98 | 43* b | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 57.2 | 53.3 | 93 | 68.2 | 109 | 25 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 57.2 | 44.1 | 77 | 61.5 | 98 | 33* b | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 57.2 | 55.9 | 98 | 66.0 | 106 | 17 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 57.2 | 52.8 | 92 | 63.4 | 102 | 18 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 57.2 | 26.9 | 47* a | 57.2 | 92 | 72* b | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 57.2 | 31.2 | 55* a | 50.1 | 80 | 46* b | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 57.2 | 55.8 | 98 | 61.4 | 98 | 10 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 57.2 | 52.0 | 91 | 64.2 | 103 | 21 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 57.2 | 52.9 | 93 | 60.2 | 96 | 13 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 57.2 | 55.3 | 97 | 61.4 | 98 | 10 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 57.2 | 47.1 | 82 | 64.1 | 103 | 31* b | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 57.2 | 40.2 | 70 | 58.0 | 93 | 36* b | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 57.2 | 41.4 | 72 | 56.8 | 91 | 31* b | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 57.2 | 24.7 | 43* a | 5.7 | 9* a | 125* b | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 57.2 | 52.9 | 93 | 59.9 | 96 | 12 | 70-130/30 |
| | m,p-Xylene | ND | | 114 | 102 | 89 | 128 | 103 | 23 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 57.2 | 50.5 | 88 | 65.8 | 105 | 26 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 171 | 152 | 89 | 194 | 104 | 24 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC125-5MS | P53249.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |
| MC125-5MSD | P53250.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |
| MC125-5 | P53246.D | 1 | 05/24/11 | AMY | n/a | n/a | MSP1766 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC125-1, MC125-2, MC125-3, MC125-4, MC125-5, MC125-6, MC125-7

| CAS No. | Surrogate Recoveries | MS | MSD | MC125-5 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 118% | 112% | 117% | 70-130% |
| 2037-26-5 | Toluene-D8 | 119% | 117% | 121% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 102% | 99% | 99% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) High RPD due to possible matrix interference and/or sample non-homogeneity.

# Volatile Internal Standard Area Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSP1766-CC1750 | Injection Date: | 05/23/11 |
| Lab File ID: | P53234.D | Injection Time: | 19:26 |
| Instrument ID: | GCMSP | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 59667 | 8.50 | 84746 | 9.35 | 39622 | 12.58 | 38844 | 15.13 | 18595 | 6.19 |
| Upper Limit [a] | 119334 | 9.00 | 169492 | 9.85 | 79244 | 13.08 | 77688 | 15.63 | 37190 | 6.69 |
| Lower Limit [b] | 29834 | 8.00 | 42373 | 8.85 | 19811 | 12.08 | 19422 | 14.63 | 9298 | 5.69 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSP1766-BS | 58059 | 8.50 | 82017 | 9.35 | 40608 | 12.57 | 40036 | 15.13 | 16964 | 6.19 |
| MSP1766-MB | 44146 | 8.51 | 61193 | 9.36 | 28794 | 12.58 | 25866 | 15.14 | 13262 | 6.21 |
| MC125-2 | 69858 | 8.50 | 95733 | 9.35 | 48600 | 12.58 | 51414 | 15.14 | 26393 | 6.19 |
| MC125-3 | 55639 | 8.50 | 73342 | 9.36 | 32558 | 12.58 | 30343 | 15.14 | 24943 | 6.21 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSP1766-CC1750 | Injection Date: | 05/24/11 |
| Lab File ID: | P53241.D | Injection Time: | 08:20 |
| Instrument ID: | GCMSP | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 55037 | 8.50 | 77402 | 9.35 | 38416 | 12.58 | 40853 | 15.13 | 15233 | 6.19 |
| Upper Limit [a] | 110074 | 9.00 | 154804 | 9.85 | 76832 | 13.08 | 81706 | 15.63 | 30466 | 6.69 |
| Lower Limit [b] | 27519 | 8.00 | 38701 | 8.85 | 19208 | 12.08 | 20427 | 14.63 | 7617 | 5.69 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSP1766-BS1 | 55380 | 8.50 | 77760 | 9.35 | 36690 | 12.57 | 38571 | 15.13 | 15091 | 6.19 |
| MSP1766-MB1 | 42781 | 8.51 | 57173 | 9.36 | 26610 | 12.58 | 24674 | 15.14 | 13386 | 6.21 |
| MC125-4 | 48225 | 8.51 | 65726 | 9.36 | 30332 | 12.58 | 27483 | 15.14 | 20251 | 6.21 |
| MC125-5 | 43178 | 8.51 | 59263 | 9.36 | 27888 | 12.58 | 25716 | 15.14 | 19610 | 6.22 |
| MC125-6 | 55989 | 8.50 | 78175 | 9.36 | 38195 | 12.58 | 35128 | 15.13 | 21371 | 6.21 |
| MC125-7 | 50827 | 8.51 | 68432 | 9.36 | 31701 | 12.58 | 28504 | 15.14 | 21658 | 6.23 |
| MC125-5MS | 51606 | 8.50 | 75418 | 9.35 | 36003 | 12.58 | 35940 | 15.13 | 22910 | 6.20 |
| MC125-5MSD | 55490 | 8.50 | 79034 | 9.35 | 39240 | 12.57 | 39894 | 15.13 | 24466 | 6.19 |
| ZZZZZZ | 33727 | 8.51 | 43518 | 9.36 | 18032[c] | 12.58 | 13208[c] | 15.14 | 13754 | 6.22 |
| ZZZZZZ | 39641 | 8.51 | 54122 | 9.36 | 25437 | 12.58 | 21104 | 15.14 | 17898 | 6.20 |
| ZZZZZZ | 42681 | 8.51 | 57813 | 9.36 | 27327 | 12.58 | 23892 | 15.14 | 16581 | 6.21 |
| ZZZZZZ | 27768 | 8.51 | 29687[c] | 9.36 | 9519[c] | 12.58 | 5729[c] | 15.14 | 18809 | 6.21 |
| ZZZZZZ | 5862[c] | 8.51 | 6704[c] | 9.36 | 2502[c] | 12.59 | 1438[c] | 15.15 | 1174[c] | 6.30 |
| ZZZZZZ | 40003 | 8.51 | 52567 | 9.36 | 21881 | 12.58 | 12942[c] | 15.14 | 21854 | 6.21 |
| ZZZZZZ | 41490 | 8.51 | 57054 | 9.36 | 24319 | 12.58 | 15864[c] | 15.14 | 18543 | 6.21 |
| ZZZZZZ | 33645 | 8.51 | 41982 | 9.36 | 13496[c] | 12.58 | 6911[c] | 15.14 | 20532 | 6.21 |
| ZZZZZZ | 26973[c] | 8.51 | 32803[c] | 9.36 | 9303[c] | 12.58 | 4499[c] | 15.14 | 19476 | 6.21 |
| ZZZZZZ | 43148 | 8.51 | 60254 | 9.36 | 28287 | 12.58 | 22806 | 15.14 | 20981 | 6.20 |
| ZZZZZZ | 41622 | 8.51 | 57681 | 9.36 | 26985 | 12.58 | 22607 | 15.14 | 19354 | 6.21 |
| ZZZZZZ | 43206 | 8.51 | 60667 | 9.36 | 29194 | 12.58 | 24316 | 15.14 | 19932 | 6.21 |
| ZZZZZZ | 41512 | 8.51 | 57867 | 9.36 | 25067 | 12.58 | 16175[c] | 15.14 | 20982 | 6.21 |
| MC125-1 | 62177 | 8.51 | 86575 | 9.36 | 40798 | 12.58 | 33863 | 15.14 | 18046 | 6.26 |
| MC125-6 [d] | 53482 | 8.50 | 76949 | 9.36 | 39074 | 12.58 | 34718 | 15.13 | 27125 | 6.21 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.
(d) Confirmation run for surrogate recoveries.

# Volatile Surrogate Recovery Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC125-1 | P53265.D | 113.0 | 124.0 | 114.0 |
| MC125-2 | P53239.D | 113.0 | 128.0 | 107.0 |
| MC125-3 | P53240.D | 111.0 | 119.0 | 105.0 |
| MC125-4 | P53245.D | 117.0 | 125.0 | 109.0 |
| MC125-5 | P53246.D | 117.0 | 121.0 | 99.0 |
| MC125-6 | P53266.D | 121.0 | 134.0* [a] | 112.0 |
| MC125-6 | P53247.D | 118.0 | 133.0* [a] | 118.0 |
| MC125-7 | P53248.D | 115.0 | 125.0 | 105.0 |
| MC125-5MS | P53249.D | 118.0 | 119.0 | 102.0 |
| MC125-5MSD | P53250.D | 112.0 | 117.0 | 99.0 |
| MSP1766-BS | P53235.D | 112.0 | 119.0 | 101.0 |
| MSP1766-BS1 | P53242.D | 107.0 | 116.0 | 98.0 |
| MSP1766-MB | P53237.D | 117.0 | 121.0 | 99.0 |
| MSP1766-MB1 | P53244.D | 112.0 | 122.0 | 100.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

(a) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

New England ACCUTEST LABORATORIES

## GC/MS Semi-volatiles



### QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24969-MB | I72783.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |

The QC reported here applies to the following samples: Method: SW846 8270C

MC125-1, MC125-2, MC125-3, MC125-4, MC125-5, MC125-6, MC125-7



| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | ND | 500 | 39 | ug/kg | |
| 95-57-8 | 2-Chlorophenol | ND | 250 | 13 | ug/kg | |
| 59-50-7 | 4-Chloro-3-methyl phenol | ND | 500 | 17 | ug/kg | |
| 120-83-2 | 2,4-Dichlorophenol | ND | 500 | 29 | ug/kg | |
| 105-67-9 | 2,4-Dimethylphenol | ND | 500 | 50 | ug/kg | |
| 51-28-5 | 2,4-Dinitrophenol | ND | 1000 | 250 | ug/kg | |
| 534-52-1 | 4,6-Dinitro-o-cresol | ND | 500 | 250 | ug/kg | |
| 95-48-7 | 2-Methylphenol | ND | 500 | 14 | ug/kg | |
| | 3&4-Methylphenol | ND | 500 | 26 | ug/kg | |
| 88-75-5 | 2-Nitrophenol | ND | 500 | 30 | ug/kg | |
| 100-02-7 | 4-Nitrophenol | ND | 1000 | 250 | ug/kg | |
| 87-86-5 | Pentachlorophenol | ND | 500 | 46 | ug/kg | |
| 108-95-2 | Phenol | ND | 250 | 42 | ug/kg | |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | 500 | 37 | ug/kg | |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | 500 | 34 | ug/kg | |
| 83-32-9 | Acenaphthene | ND | 250 | 21 | ug/kg | |
| 208-96-8 | Acenaphthylene | ND | 250 | 19 | ug/kg | |
| 62-53-3 | Aniline | ND | 500 | 500 | ug/kg | |
| 120-12-7 | Anthracene | ND | 250 | 20 | ug/kg | |
| 56-55-3 | Benzo(a)anthracene | ND | 250 | 9.2 | ug/kg | |
| 50-32-8 | Benzo(a)pyrene | ND | 250 | 15 | ug/kg | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 250 | 29 | ug/kg | |
| 191-24-2 | Benzo(g,h,i)perylene | ND | 250 | 16 | ug/kg | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 250 | 7.4 | ug/kg | |
| 101-55-3 | 4-Bromophenyl phenyl ether | ND | 250 | 20 | ug/kg | |
| 85-68-7 | Butyl benzyl phthalate | ND | 250 | 11 | ug/kg | |
| 100-51-6 | Benzyl Alcohol | ND | 500 | 30 | ug/kg | |
| 91-58-7 | 2-Chloronaphthalene | ND | 250 | 21 | ug/kg | |
| 106-47-8 | 4-Chloroaniline | ND | 500 | 130 | ug/kg | |
| 218-01-9 | Chrysene | ND | 250 | 8.2 | ug/kg | |
| 111-91-1 | bis(2-Chloroethoxy)methane | ND | 250 | 20 | ug/kg | |
| 111-44-4 | bis(2-Chloroethyl)ether | ND | 250 | 5.4 | ug/kg | |
| 108-60-1 | bis(2-Chloroisopropyl)ether | ND | 250 | 24 | ug/kg | |
| 7005-72-3 | 4-Chlorophenyl phenyl ether | ND | 250 | 22 | ug/kg | |
| 122-66-7 | 1,2-Diphenylhydrazine | ND | 250 | 21 | ug/kg | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | 500 | 130 | ug/kg | |

# Method Blank Summary

Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24969-MB | I72783.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |

The QC reported here applies to the following samples: Method: SW846 8270C

MC125-1, MC125-2, MC125-3, MC125-4, MC125-5, MC125-6, MC125-7

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | ND | 500 | 24 | ug/kg | |
| 91-94-1 | 3,3'-Dichlorobenzidine | ND | 250 | 6.0 | ug/kg | |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | 250 | 16 | ug/kg | |
| 132-64-9 | Dibenzofuran | ND | 250 | 21 | ug/kg | |
| 84-74-2 | Di-n-butyl phthalate | ND | 250 | 23 | ug/kg | |
| 117-84-0 | Di-n-octyl phthalate | ND | 250 | 13 | ug/kg | |
| 84-66-2 | Diethyl phthalate | ND | 250 | 22 | ug/kg | |
| 131-11-3 | Dimethyl phthalate | ND | 250 | 18 | ug/kg | |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | ND | 250 | 17 | ug/kg | |
| 206-44-0 | Fluoranthene | ND | 250 | 8.5 | ug/kg | |
| 86-73-7 | Fluorene | ND | 250 | 5.5 | ug/kg | |
| 118-74-1 | Hexachlorobenzene | ND | 250 | 22 | ug/kg | |
| 77-47-4 | Hexachlorocyclopentadiene | ND | 500 | 3.4 | ug/kg | |
| 67-72-1 | Hexachloroethane | ND | 250 | 20 | ug/kg | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 250 | 15 | ug/kg | |
| 78-59-1 | Isophorone | ND | 250 | 25 | ug/kg | |
| 90-12-0 | 1-Methylnaphthalene | ND | 250 | 250 | ug/kg | |
| 91-57-6 | 2-Methylnaphthalene | ND | 250 | 21 | ug/kg | |
| 88-74-4 | 2-Nitroaniline | ND | 500 | 130 | ug/kg | |
| 99-09-2 | 3-Nitroaniline | ND | 500 | 130 | ug/kg | |
| 100-01-6 | 4-Nitroaniline | ND | 500 | 19 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 5.8 | ug/kg | |
| 98-95-3 | Nitrobenzene | ND | 250 | 7.4 | ug/kg | |
| 62-75-9 | n-Nitrosodimethylamine | ND | 250 | 21 | ug/kg | |
| 621-64-7 | N-Nitroso-di-n-propylamine | ND | 250 | 16 | ug/kg | |
| 86-30-6 | N-Nitrosodiphenylamine | ND | 250 | 13 | ug/kg | |
| 85-01-8 | Phenanthrene | ND | 250 | 6.5 | ug/kg | |
| 129-00-0 | Pyrene | ND | 250 | 8.1 | ug/kg | |
| 110-86-1 | Pyridine | ND | 500 | 500 | ug/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 67% | 30-130% |
| 4165-62-2 | Phenol-d5 | 64% | 30-130% |
| 118-79-6 | 2,4,6-Tribromophenol | 68% | 30-130% |

# Method Blank Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24969-MB | I72783.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |

The QC reported here applies to the following samples: Method: SW846 8270C

MC125-1, MC125-2, MC125-3, MC125-4, MC125-5, MC125-6, MC125-7

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 4165-60-0 | Nitrobenzene-d5 | 59% | 30-130% |
| 321-60-8 | 2-Fluorobiphenyl | 65% | 30-130% |
| 1718-51-0 | Terphenyl-d14 | 84% | 30-130% |

6.1.1

# Blank Spike Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24969-BS | I72784.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |

The QC reported here applies to the following samples: Method: SW846 8270C

MC125-1, MC125-2, MC125-3, MC125-4, MC125-5, MC125-6, MC125-7

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | 4780 | 3430 | 72 | 30-130 |
| 95-57-8 | 2-Chlorophenol | 4780 | 3170 | 66 | 30-130 |
| 59-50-7 | 4-Chloro-3-methyl phenol | 4780 | 3720 | 78 | 30-130 |
| 120-83-2 | 2,4-Dichlorophenol | 4780 | 3180 | 67 | 30-130 |
| 105-67-9 | 2,4-Dimethylphenol | 4780 | 3260 | 68 | 30-130 |
| 51-28-5 | 2,4-Dinitrophenol | 4780 | 2220 | 46 | 30-130 |
| 534-52-1 | 4,6-Dinitro-o-cresol | 4780 | 3470 | 73 | 30-130 |
| 95-48-7 | 2-Methylphenol | 4780 | 3330 | 70 | 30-130 |
| | 3&4-Methylphenol | 9560 | 8720 | 91 | 30-130 |
| 88-75-5 | 2-Nitrophenol | 4780 | 3180 | 67 | 30-130 |
| 100-02-7 | 4-Nitrophenol | 4780 | 3740 | 78 | 30-130 |
| 87-86-5 | Pentachlorophenol | 4780 | 3930 | 82 | 30-130 |
| 108-95-2 | Phenol | 4780 | 3090 | 65 | 30-130 |
| 95-95-4 | 2,4,5-Trichlorophenol | 4780 | 3460 | 72 | 30-130 |
| 88-06-2 | 2,4,6-Trichlorophenol | 4780 | 3440 | 72 | 30-130 |
| 83-32-9 | Acenaphthene | 2390 | 1590 | 67 | 40-140 |
| 208-96-8 | Acenaphthylene | 2390 | 1390 | 58 | 40-140 |
| 62-53-3 | Aniline | 2390 | 1960 | 82 | 40-140 |
| 120-12-7 | Anthracene | 2390 | 1680 | 70 | 40-140 |
| 56-55-3 | Benzo(a)anthracene | 2390 | 1950 | 82 | 40-140 |
| 50-32-8 | Benzo(a)pyrene | 2390 | 1620 | 68 | 40-140 |
| 205-99-2 | Benzo(b)fluoranthene | 2390 | 1650 | 69 | 40-140 |
| 191-24-2 | Benzo(g,h,i)perylene | 2390 | 1610 | 67 | 40-140 |
| 207-08-9 | Benzo(k)fluoranthene | 2390 | 1710 | 72 | 40-140 |
| 101-55-3 | 4-Bromophenyl phenyl ether | 2390 | 1830 | 77 | 40-140 |
| 85-68-7 | Butyl benzyl phthalate | 2390 | 1980 | 83 | 40-140 |
| 100-51-6 | Benzyl Alcohol | 2390 | 1630 | 68 | 40-140 |
| 91-58-7 | 2-Chloronaphthalene | 2390 | 1570 | 66 | 40-140 |
| 106-47-8 | 4-Chloroaniline | 2390 | 1420 | 59 | 40-140 |
| 218-01-9 | Chrysene | 2390 | 1800 | 75 | 40-140 |
| 111-91-1 | bis(2-Chloroethoxy)methane | 2390 | 1490 | 62 | 40-140 |
| 111-44-4 | bis(2-Chloroethyl)ether | 2390 | 1890 | 79 | 40-140 |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 2390 | 1510 | 63 | 40-140 |
| 7005-72-3 | 4-Chlorophenyl phenyl ether | 2390 | 1740 | 73 | 40-140 |
| 122-66-7 | 1,2-Diphenylhydrazine | 2390 | 1520 | 64 | 40-140 |
| 121-14-2 | 2,4-Dinitrotoluene | 2390 | 1810 | 76 | 40-140 |

# Blank Spike Summary

Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24969-BS | I72784.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |



The QC reported here applies to the following samples: Method: SW846 8270C

MC125-1, MC125-2, MC125-3, MC125-4, MC125-5, MC125-6, MC125-7

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | 2390 | 1680 | 70 | 40-140 |
| 91-94-1 | 3,3'-Dichlorobenzidine | 2390 | 1700 | 71 | 40-140 |
| 53-70-3 | Dibenzo(a,h)anthracene | 2390 | 1800 | 75 | 40-140 |
| 132-64-9 | Dibenzofuran | 2390 | 1570 | 66 | 40-140 |
| 84-74-2 | Di-n-butyl phthalate | 2390 | 1870 | 78 | 40-140 |
| 117-84-0 | Di-n-octyl phthalate | 2390 | 1940 | 81 | 40-140 |
| 84-66-2 | Diethyl phthalate | 2390 | 1870 | 78 | 40-140 |
| 131-11-3 | Dimethyl phthalate | 2390 | 1740 | 73 | 40-140 |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 2390 | 2040 | 85 | 40-140 |
| 206-44-0 | Fluoranthene | 2390 | 1770 | 74 | 40-140 |
| 86-73-7 | Fluorene | 2390 | 1720 | 72 | 40-140 |
| 118-74-1 | Hexachlorobenzene | 2390 | 1730 | 72 | 40-140 |
| 77-47-4 | Hexachlorocyclopentadiene | 2390 | 952 | 40 | 40-140 |
| 67-72-1 | Hexachloroethane | 2390 | 1430 | 60 | 40-140 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 2390 | 1780 | 74 | 40-140 |
| 78-59-1 | Isophorone | 2390 | 1440 | 60 | 40-140 |
| 90-12-0 | 1-Methylnaphthalene | 2390 | 2970 | 124 | 40-140 |
| 91-57-6 | 2-Methylnaphthalene | 2390 | 1510 | 63 | 40-140 |
| 88-74-4 | 2-Nitroaniline | 2390 | 1850 | 77 | 40-140 |
| 99-09-2 | 3-Nitroaniline | 2390 | 1670 | 70 | 40-140 |
| 100-01-6 | 4-Nitroaniline | 2390 | 1730 | 72 | 40-140 |
| 91-20-3 | Naphthalene | 2390 | 1490 | 62 | 40-140 |
| 98-95-3 | Nitrobenzene | 2390 | 1370 | 57 | 40-140 |
| 62-75-9 | n-Nitrosodimethylamine | 2390 | 1320 | 55 | 40-140 |
| 621-64-7 | N-Nitroso-di-n-propylamine | 2390 | 1640 | 69 | 40-140 |
| 86-30-6 | N-Nitrosodiphenylamine | 2390 | 1750 | 73 | 40-140 |
| 85-01-8 | Phenanthrene | 2390 | 1690 | 71 | 40-140 |
| 129-00-0 | Pyrene | 2390 | 1900 | 79 | 40-140 |
| 110-86-1 | Pyridine | 2390 | 1120 | 47 | 40-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 67% | 30-130% |
| 4165-62-2 | Phenol-d5 | 66% | 30-130% |
| 118-79-6 | 2,4,6-Tribromophenol | 74% | 30-130% |

# Blank Spike Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24969-BS | I72784.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |

The QC reported here applies to the following samples: Method: SW846 8270C

MC125-1, MC125-2, MC125-3, MC125-4, MC125-5, MC125-6, MC125-7

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 4165-60-0 | Nitrobenzene-d5 | 60% | 30-130% |
| 321-60-8 | 2-Fluorobiphenyl | 65% | 30-130% |
| 1718-51-0 | Terphenyl-d14 | 84% | 30-130% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24969-MS | I72785.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |
| OP24969-MSD | I72786.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |
| MC125-5 | I72791.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |

The QC reported here applies to the following samples: Method: SW846 8270C

MC125-1, MC125-2, MC125-3, MC125-4, MC125-5, MC125-6, MC125-7

| CAS No. | Compound | MC125-5 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | ND | | 5580 | 3670 | 66 | 3500 | 62 | 5 | 30-130/30 |
| 95-57-8 | 2-Chlorophenol | ND | | 5580 | 3350 | 60 | 3470 | 61 | 4 | 30-130/30 |
| 59-50-7 | 4-Chloro-3-methyl phenol | ND | | 5580 | 4100 | 74 | 4360 | 77 | 6 | 30-130/30 |
| 120-83-2 | 2,4-Dichlorophenol | ND | | 5580 | 3460 | 62 | 3640 | 64 | 5 | 30-130/30 |
| 105-67-9 | 2,4-Dimethylphenol | ND | | 5580 | 3490 | 63 | 3560 | 63 | 2 | 30-130/30 |
| 51-28-5 | 2,4-Dinitrophenol | ND | | 5580 | 2090 | 37 | 2140 | 38 | 2 | 30-130/30 |
| 534-52-1 | 4,6-Dinitro-o-cresol | ND | | 5580 | 3500 | 63 | 3760 | 67 | 7 | 30-130/30 |
| 95-48-7 | 2-Methylphenol | ND | | 5580 | 3690 | 66 | 3780 | 67 | 2 | 30-130/30 |
| | 3&4-Methylphenol | ND | | 11200 | 9690 | 87 | 10100 | 89 | 4 | 30-130/30 |
| 88-75-5 | 2-Nitrophenol | ND | | 5580 | 3420 | 61 | 3570 | 63 | 4 | 30-130/30 |
| 100-02-7 | 4-Nitrophenol | ND | | 5580 | 4410 | 79 | 4600 | 81 | 4 | 30-130/30 |
| 87-86-5 | Pentachlorophenol | ND | | 5580 | 4300 | 77 | 4450 | 79 | 3 | 30-130/30 |
| 108-95-2 | Phenol | ND | | 5580 | 3460 | 62 | 3550 | 63 | 3 | 30-130/30 |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | | 5580 | 3840 | 69 | 4240 | 75 | 10 | 30-130/30 |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | | 5580 | 3860 | 69 | 4140 | 73 | 7 | 30-130/30 |
| 83-32-9 | Acenaphthene | ND | | 2790 | 1790 | 64 | 1910 | 68 | 6 | 40-140/30 |
| 208-96-8 | Acenaphthylene | ND | | 2790 | 1540 | 55 | 1630 | 58 | 6 | 40-140/30 |
| 62-53-3 | Aniline | ND | | 2790 | 1970 | 71 | 2030 | 72 | 3 | 40-140/30 |
| 120-12-7 | Anthracene | ND | | 2790 | 1910 | 69 | 2040 | 72 | 7 | 40-140/30 |
| 56-55-3 | Benzo(a)anthracene | ND | | 2790 | 2250 | 81 | 2390 | 85 | 6 | 40-140/30 |
| 50-32-8 | Benzo(a)pyrene | ND | | 2790 | 1900 | 68 | 2000 | 71 | 5 | 40-140/30 |
| 205-99-2 | Benzo(b)fluoranthene | ND | | 2790 | 2010 | 72 | 2090 | 74 | 4 | 40-140/30 |
| 191-24-2 | Benzo(g,h,i)perylene | ND | | 2790 | 1800 | 65 | 1860 | 66 | 3 | 40-140/30 |
| 207-08-9 | Benzo(k)fluoranthene | ND | | 2790 | 1860 | 67 | 1960 | 69 | 5 | 40-140/30 |
| 101-55-3 | 4-Bromophenyl phenyl ether | ND | | 2790 | 2010 | 72 | 2190 | 78 | 9 | 40-140/30 |
| 85-68-7 | Butyl benzyl phthalate | ND | | 2790 | 2260 | 81 | 2430 | 86 | 7 | 40-140/30 |
| 100-51-6 | Benzyl Alcohol | ND | | 2790 | 1810 | 65 | 1900 | 67 | 5 | 40-140/30 |
| 91-58-7 | 2-Chloronaphthalene | ND | | 2790 | 1760 | 63 | 1890 | 67 | 7 | 40-140/30 |
| 106-47-8 | 4-Chloroaniline | ND | | 2790 | 1640 | 59 | 1670 | 59 | 2 | 40-140/30 |
| 218-01-9 | Chrysene | ND | | 2790 | 2080 | 75 | 2180 | 77 | 5 | 40-140/30 |
| 111-91-1 | bis(2-Chloroethoxy)methane | ND | | 2790 | 1620 | 58 | 1680 | 59 | 4 | 40-140/30 |
| 111-44-4 | bis(2-Chloroethyl)ether | ND | | 2790 | 2020 | 72 | 2060 | 73 | 2 | 40-140/30 |
| 108-60-1 | bis(2-Chloroisopropyl)ether | ND | | 2790 | 1570 | 56 | 1620 | 57 | 3 | 40-140/30 |
| 7005-72-3 | 4-Chlorophenyl phenyl ether | ND | | 2790 | 1920 | 69 | 2100 | 74 | 9 | 40-140/30 |
| 122-66-7 | 1,2-Diphenylhydrazine | ND | | 2790 | 1860 | 67 | 1990 | 70 | 7 | 40-140/30 |
| 121-14-2 | 2,4-Dinitrotoluene | ND | | 2790 | 1990 | 71 | 2170 | 77 | 9 | 40-140/30 |

6.3.1

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24969-MS | I72785.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |
| OP24969-MSD | I72786.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |
| MC125-5 | I72791.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |

The QC reported here applies to the following samples: Method: SW846 8270C

MC125-1, MC125-2, MC125-3, MC125-4, MC125-5, MC125-6, MC125-7

| CAS No. | Compound | MC125-5 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | ND | | 2790 | 1900 | 68 | 2040 | 72 | 7 | 40-140/30 |
| 91-94-1 | 3,3'-Dichlorobenzidine | ND | | 2790 | 1900 | 68 | 2160 | 76 | 13 | 40-140/30 |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | | 2790 | 2020 | 72 | 2080 | 74 | 3 | 40-140/30 |
| 132-64-9 | Dibenzofuran | ND | | 2790 | 1730 | 62 | 1870 | 66 | 8 | 40-140/30 |
| 84-74-2 | Di-n-butyl phthalate | ND | | 2790 | 2130 | 76 | 2270 | 80 | 6 | 40-140/30 |
| 117-84-0 | Di-n-octyl phthalate | ND | | 2790 | 2320 | 83 | 2390 | 85 | 3 | 40-140/30 |
| 84-66-2 | Diethyl phthalate | ND | | 2790 | 2080 | 75 | 2240 | 79 | 7 | 40-140/30 |
| 131-11-3 | Dimethyl phthalate | ND | | 2790 | 1970 | 71 | 2100 | 74 | 6 | 40-140/30 |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 96.3 | J | 2790 | 2360 | 81 | 2550 | 87 | 8 | 40-140/30 |
| 206-44-0 | Fluoranthene | ND | | 2790 | 2040 | 73 | 2160 | 76 | 6 | 40-140/30 |
| 86-73-7 | Fluorene | ND | | 2790 | 1900 | 68 | 2070 | 73 | 9 | 40-140/30 |
| 118-74-1 | Hexachlorobenzene | ND | | 2790 | 1930 | 69 | 2060 | 73 | 7 | 40-140/30 |
| 77-47-4 | Hexachlorocyclopentadiene | ND | | 2790 | 985 | 35* [a] | 1020 | 36* [a] | 3 | 40-140/30 |
| 67-72-1 | Hexachloroethane | ND | | 2790 | 1440 | 52 | 1500 | 53 | 4 | 40-140/30 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | | 2790 | 2000 | 72 | 2060 | 73 | 3 | 40-140/30 |
| 78-59-1 | Isophorone | ND | | 2790 | 1590 | 57 | 1640 | 58 | 3 | 40-140/30 |
| 90-12-0 | 1-Methylnaphthalene | ND | | 2790 | 3250 | 117 | 3400 | 120 | 5 | 40-140/30 |
| 91-57-6 | 2-Methylnaphthalene | ND | | 2790 | 1650 | 59 | 1690 | 60 | 2 | 40-140/30 |
| 88-74-4 | 2-Nitroaniline | ND | | 2790 | 2060 | 74 | 2190 | 78 | 6 | 40-140/30 |
| 99-09-2 | 3-Nitroaniline | ND | | 2790 | 2000 | 72 | 2080 | 74 | 4 | 40-140/30 |
| 100-01-6 | 4-Nitroaniline | ND | | 2790 | 2000 | 72 | 2120 | 75 | 6 | 40-140/30 |
| 91-20-3 | Naphthalene | ND | | 2790 | 1590 | 57 | 1640 | 58 | 3 | 40-140/30 |
| 98-95-3 | Nitrobenzene | ND | | 2790 | 1480 | 53 | 1510 | 53 | 2 | 40-140/30 |
| 62-75-9 | n-Nitrosodimethylamine | ND | | 2790 | 1520 | 55 | 1460 | 52 | 4 | 40-140/30 |
| 621-64-7 | N-Nitroso-di-n-propylamine | ND | | 2790 | 1690 | 61 | 1820 | 64 | 7 | 40-140/30 |
| 86-30-6 | N-Nitrosodiphenylamine | ND | | 2790 | 1970 | 71 | 2110 | 75 | 7 | 40-140/30 |
| 85-01-8 | Phenanthrene | ND | | 2790 | 1920 | 69 | 2040 | 72 | 6 | 40-140/30 |
| 129-00-0 | Pyrene | ND | | 2790 | 2170 | 78 | 2350 | 83 | 8 | 40-140/30 |
| 110-86-1 | Pyridine | ND | | 2790 | 1210 | 43 | 1200 | 42 | 1 | 40-140/30 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC125-5 | Limits |
|---|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 61% | 62% | 71% | 30-130% |
| 4165-62-2 | Phenol-d5 | 63% | 64% | 73% | 30-130% |
| 118-79-6 | 2,4,6-Tribromophenol | 71% | 76% | 69% | 30-130% |

6.3.1

6

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24969-MS | I72785.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |
| OP24969-MSD | I72786.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |
| MC125-5 | I72791.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |

The QC reported here applies to the following samples: Method: SW846 8270C

MC125-1, MC125-2, MC125-3, MC125-4, MC125-5, MC125-6, MC125-7

| CAS No. | Surrogate Recoveries | MS | MSD | MC125-5 | Limits |
|---|---|---|---|---|---|
| 4165-60-0 | Nitrobenzene-d5 | 55% | 56% | 62% | 30-130% |
| 321-60-8 | 2-Fluorobiphenyl | 62% | 66% | 69% | 30-130% |
| 1718-51-0 | Terphenyl-d14 | 82% | 87% | 87% | 30-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

# Semivolatile Internal Standard Area Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSI2615-CC2552 | Injection Date: | 05/24/11 |
| Lab File ID: | I72776.D | Injection Time: | 09:00 |
| Instrument ID: | GCMS1 | Method: | SW846 8270C |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT | IS 6 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 118178 | 5.26 | 445084 | 6.54 | 234055 | 8.96 | 376856 | 11.47 | 299986 | 16.42 | 312474 | 18.95 |
| Upper Limit [a] | 236356 | 5.76 | 890168 | 7.04 | 468110 | 9.46 | 753712 | 11.97 | 599972 | 16.92 | 624948 | 19.45 |
| Lower Limit [b] | 59089 | 4.76 | 222542 | 6.04 | 117028 | 8.46 | 188428 | 10.97 | 149993 | 15.92 | 156237 | 18.45 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT | IS 6 AREA | RT |
| OP24955-MB | 153378 | 5.26 | 568440 | 6.54 | 297503 | 8.96 | 479660 | 11.47 | 387181 | 16.42 | 341526 | 18.95 |
| OP24955-BS | 140870 | 5.26 | 535446 | 6.54 | 277035 | 8.96 | 446414 | 11.47 | 342886 | 16.42 | 366773 | 18.95 |
| OP24955-MS | 139930 | 5.26 | 525824 | 6.54 | 277549 | 8.96 | 445165 | 11.47 | 345773 | 16.42 | 371313 | 18.95 |
| OP24955-MSD | 147848 | 5.26 | 554120 | 6.54 | 290385 | 8.96 | 459811 | 11.47 | 353445 | 16.42 | 388876 | 18.95 |
| MC308-1 | 132184 | 5.26 | 484501 | 6.54 | 258544 | 8.95 | 440566 | 11.46 | 330844 | 16.41 | 284888 | 18.95 |
| ZZZZZZ | 153409 | 5.26 | 561511 | 6.54 | 296589 | 8.96 | 461408 | 11.47 | 408982 | 16.42 | 308039 | 18.95 |
| OP24969-MB | 152227 | 5.26 | 567432 | 6.54 | 291252 | 8.96 | 457772 | 11.46 | 357745 | 16.41 | 315600 | 18.95 |
| OP24969-BS | 165943 | 5.26 | 624067 | 6.54 | 333577 | 8.96 | 534063 | 11.47 | 392491 | 16.42 | 403507 | 18.95 |
| OP24969-MS | 183821 | 5.26 | 676299 | 6.54 | 356576 | 8.96 | 567617 | 11.47 | 416820 | 16.42 | 410087 | 18.95 |
| OP24969-MSD | 164911 | 5.26 | 620269 | 6.54 | 323647 | 8.96 | 514915 | 11.47 | 370794 | 16.42 | 387243 | 18.95 |
| MC125-1 | 177220 | 5.26 | 656644 | 6.54 | 339804 | 8.96 | 528019 | 11.47 | 400964 | 16.41 | 329662 | 18.95 |
| MC125-2 | 165221 | 5.26 | 602196 | 6.54 | 306328 | 8.96 | 483999 | 11.46 | 394431 | 16.41 | 328242 | 18.95 |
| MC125-3 | 174864 | 5.26 | 636432 | 6.54 | 328200 | 8.96 | 509839 | 11.47 | 387393 | 16.41 | 312701 | 18.95 |
| MC125-4 | 176693 | 5.26 | 650078 | 6.54 | 344254 | 8.96 | 538581 | 11.47 | 410327 | 16.41 | 313380 | 18.95 |
| MC125-5 | 182179 | 5.26 | 685552 | 6.54 | 353514 | 8.96 | 547600 | 11.46 | 393026 | 16.41 | 297337 | 18.95 |
| MC125-6 | 172782 | 5.26 | 641127 | 6.54 | 331545 | 8.96 | 513018 | 11.47 | 390379 | 16.41 | 338182 | 18.95 |
| MC125-7 | 179928 | 5.26 | 669912 | 6.54 | 345055 | 8.96 | 533580 | 11.46 | 417844 | 16.41 | 359657 | 18.95 |
| ZZZZZZ | 190870 | 5.26 | 704360 | 6.54 | 358758 | 8.96 | 543805 | 11.46 | 406130 | 16.41 | 357544 | 18.95 |
| ZZZZZZ | 211888 | 5.26 | 773442 | 6.54 | 385616 | 8.96 | 561015 | 11.47 | 392331 | 16.41 | 348772 | 18.95 |
| ZZZZZZ | 201852 | 5.26 | 758532 | 6.54 | 382110 | 8.96 | 590274 | 11.47 | 479147 | 16.42 | 553286 | 18.96 |
| ZZZZZZ | 186732 | 5.26 | 688716 | 6.54 | 352312 | 8.96 | 550141 | 11.47 | 441782 | 16.42 | 425478 | 18.95 |
| ZZZZZZ | 183885 | 5.26 | 689219 | 6.54 | 363006 | 8.96 | 570242 | 11.46 | 455618 | 16.41 | 427797 | 18.95 |

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Semivolatile Surrogate Recovery Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

Method: SW846 8270C Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 | S4 | S5 | S6 |
|---|---|---|---|---|---|---|---|
| MC125-I | I72787.D | 67.0 | 65.0 | 62.0 | 56.0 | 61.0 | 73.0 |
| MC125-2 | I72788.D | 72.0 | 72.0 | 68.0 | 63.0 | 68.0 | 77.0 |
| MC125-3 | I72789.D | 84.0 | 81.0 | 78.0 | 77.0 | 79.0 | 92.0 |
| MC125-4 | I72790.D | 69.0 | 69.0 | 63.0 | 59.0 | 62.0 | 81.0 |
| MC125-5 | I72791.D | 71.0 | 73.0 | 69.0 | 62.0 | 69.0 | 87.0 |
| MC125-6 | I72792.D | 66.0 | 64.0 | 65.0 | 55.0 | 61.0 | 80.0 |
| MC125-7 | I72793.D | 72.0 | 71.0 | 65.0 | 62.0 | 66.0 | 78.0 |
| OP24969-BS | I72784.D | 67.0 | 66.0 | 74.0 | 60.0 | 65.0 | 84.0 |
| OP24969-MB | I72783.D | 67.0 | 64.0 | 68.0 | 59.0 | 65.0 | 84.0 |
| OP24969-MS | I72785.D | 61.0 | 63.0 | 71.0 | 55.0 | 62.0 | 82.0 |
| OP24969-MSD | I72786.D | 62.0 | 64.0 | 76.0 | 56.0 | 66.0 | 87.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2-Fluorophenol | 30-130% |
| S2 = Phenol-d5 | 30-130% |
| S3 = 2,4,6-Tribromophenol | 30-130% |
| S4 = Nitrobenzene-d5 | 30-130% |
| S5 = 2-Fluorobiphenyl | 30-130% |
| S6 = Terphenyl-d14 | 30-130% |

New England ACCUTEST LABORATORIES

General Chemistry

# QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| **Sample:** MC125-1 | **Analyzed:** 12-MAY-11 by CF | | **Method:** SM21 2540 B MOD. |
| **ClientID:** VMP-31-10-11 | | | |
| Wet Weight (Total) | 31.924 | g | |
| Tare Weight | 21.016 | g | |
| Dry Weight (Total) | 29.87 | g | |
| Solids, Percent | 81.2 | % | |
| **Sample:** MC125-2 | **Analyzed:** 12-MAY-11 by CF | | **Method:** SM21 2540 B MOD. |
| **ClientID:** VMP-31-17-18.5 | | | |
| Wet Weight (Total) | 36.27 | g | |
| Tare Weight | 26.071 | g | |
| Dry Weight (Total) | 34.122 | g | |
| Solids, Percent | 78.9 | % | |
| **Sample:** MC125-3 | **Analyzed:** 12-MAY-11 by CF | | **Method:** SM21 2540 B MOD. |
| **ClientID:** VMP-31-17-18.5-D | | | |
| Wet Weight (Total) | 38.591 | g | |
| Tare Weight | 26.63 | g | |
| Dry Weight (Total) | 36.401 | g | |
| Solids, Percent | 81.7 | % | |
| **Sample:** MC125-4 | **Analyzed:** 12-MAY-11 by CF | | **Method:** SM21 2540 B MOD. |
| **ClientID:** VMP-31-30-31 | | | |
| Wet Weight (Total) | 33.406 | g | |
| Tare Weight | 22.465 | g | |
| Dry Weight (Total) | 31.501 | g | |
| Solids, Percent | 82.6 | % | |
| **Sample:** MC125-5 | **Analyzed:** 12-MAY-11 by CF | | **Method:** SM21 2540 B MOD. |
| **ClientID:** VMP-32-10-12 | | | |
| Wet Weight (Total) | 27.878 | g | |
| Tare Weight | 21.446 | g | |
| Dry Weight (Total) | 27.103 | g | |
| Solids, Percent | 88 | % | |
| **Sample:** MC125-6 | **Analyzed:** 16-MAY-11 by SA | | **Method:** SM21 2540 B MOD. |
| **ClientID:** VMP-32-21.5-22 | | | |
| Wet Weight (Total) | 27.326 | g | |
| Tare Weight | 18.856 | g | |
| Dry Weight (Total) | 25.092 | g | |
| Solids, Percent | 73.6 | % | |

7.1

7

# Percent Solids Raw Data Summary



Job Number: MC125
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

Sample: MC125-7 Analyzed: 16-MAY-11 by SA Method: SM21 2540 B MOD.
ClientID: VMP-32-30-31

| | | |
|---|---|---|
| Wet Weight (Total) | 28.967 | g |
| Tare Weight | 17.464 | g |
| Dry Weight (Total) | 27.025 | g |
| Solids, Percent | 83.1 | % |

# SVE Interim System Data Review

**Laboratory SDG: MC227**

**Data Reviewer: Melissa Mansker**

**Peer Reviewer: Elizabeth Kunkel**

**Date Reviewed: 9/27/2011**

**Guidance: USEPA National Functional Guidelines for Superfund Organic Methods Data Review 2008**

| Sample Identification | Sample Identification |
|---|---|
| SVE-4-10-12' | TB51211 |

## 1.0 Data Package Completeness

*Were all items delivered as specified in the QAPP and COC as appropriate?*

Yes

## 2.0 Laboratory Case Narrative \ Cooler Receipt Form

*Were problems noted in the laboratory case narrative or cooler receipt form?*

Yes, the laboratory case narrative indicated VOC LCS recoveries were outside evaluation criteria. This issue is addressed further in the appropriate section below.

The cooler receipt form indicated samples were received by the laboratory at 0.7° C which is outside temperature criteria 4°C ± 2°C. All samples were received in good condition; no qualification of data was required.

## 3.0 Holding Times

*Were samples extracted/analyzed within applicable limits?*

Yes

## 4.0 Blank Contamination

*Were any analytes detected in the Method Blanks, Field Blanks or Trip Blanks?*

No

## 5.0 Laboratory Control Sample

*Were LCS recoveries within evaluation criteria?*

No

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSP1770-BS | VOCs | Acrolein | **255** | N/A | 70-130 |

| LCS/ LCSD ID | Parameter | Analyte | LCS/LCSD Recovery | RPD | LCS/LCSD/ RPD Criteria |
|---|---|---|---|---|---|
| MSP1770-BS | VOCs | Bromoform | **131** | N/A | 70-130 |
| MSP1770-BS | VOCs | 2,2-Dichloropropane | **140** | N/A | 70-130 |
| MSP1770-BS | VOCs | Naphthalene | **135** | N/A | 70-130 |
| MSP1770-BS | VOCs | Styrene | **135** | N/A | 70-130 |
| MSP1770-BS | VOCs | 1,2,3-Trichlorobenzene | **146** | N/A | 70-130 |
| MSN2000-BS/BSD | VOCs | Acrolein | **269/263** | 2 | 70-130/25 |
| MSN2000-BS/BSD | VOCs | Acrylonitrile | **432/422** | 2 | 70-130/25 |
| MSN2000-BS/BSD | VOCs | 2-Chloroethyl vinyl ether | **62/55** | 11 | 70-130/25 |
| MSN2000-BS/BSD | VOCs | Vinyl Acetate | **69/69** | 0 | 70-130/25 |

Analytical data reported as non-detect and associated with LCS recoveries above evaluation criteria, indicating a possible high bias, did not require qualification. LCS MSN2000-BS/BSD was associated with trip blank sample TB51211. Trip blank samples are quality control samples and are not qualified. No qualification of data was required.

## 6.0 Surrogate Recoveries

*Were surrogate recoveries within evaluation criteria?*

Yes

## 7.0 Matrix Spike and Matrix Spike Duplicate Recoveries

*Were MS/MSD samples analyzed as part of this SDG?*

No

## 8.0 Internal Standard (IS) Recoveries

*Were internal standard area recoveries within evaluation criteria?*

Yes

## 9.0 Laboratory Duplicate Results

*Were laboratory duplicate samples collected as part of this SDG?*

No

## 10.0 Field Duplicate Results

*Were field duplicate samples collected as part of this SDG?*

No

## 11.0 Sample Dilutions

*For samples that were diluted and nondetect, were undiluted results also reported?*

Not applicable; samples analyzed did not require dilution.

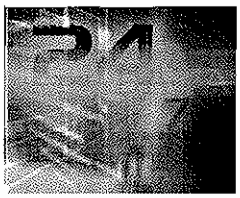
## 12.0 Additional Qualifications

*Were additional qualifications applied?*

No

New England ACCUTEST LABORATORIES

06/08/11



## Technical Report for

Shell Oil

URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

INC#97216640 / SAP#340061

Accutest Job Number: MC227

Sampling Date: 05/12/11

Report to:

URS Corporation

Elizabeth_Kunkel@URSCorp.com

ATTN: Elizabeth Kunkel

Total number of pages in report: 57

Reviewed on 9/27/2011

Reza Tand
Lab Director

ACCREDITED IN ACCORDANCE WITH nelac

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Conference and/or state specific certification programs as applicable.

Client Service contact: Jeremy Vienneau 508-481-6200

Certifications: MA (M-MA136,SW846 NELAC) CT (PH-0109) NH (250210) RI (00071) ME (MA00136) FL (E87579) NY (11791) NJ (MA926) PA (6801121) ND (R-188) CO MN (11546AA) NC (653) IL (002337) ISO 17025:2005 (L2235)

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Test results relate only to samples analyzed.



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# Sample Summary

Shell Oil

Job No: MC227

URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Collected Date | Time By | Received | Matrix Code | Matrix Type | Client Sample ID |
|---|---|---|---|---|---|---|
| MC227-1 | 05/12/11 | 16:00 RH | 05/14/11 | SO | Soil | SVE-4-10-12' |
| MC227-2 | 05/12/11 | 00:00 RH | 05/14/11 | AQ | Trip Blank Water | TB051211 |

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

# SAMPLE DELIVERY GROUP CASE NARRATIVE

| | | | |
|---|---|---|---|
| **Client:** | Shell Oil | **Job No** | MC227 |
| **Site:** | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Ha | **Report Date** | 6/2/2011 4:25:36 PM |

1 Sample(s), 1 Trip Blank(s) and 0 Field Blank(s) were collected on 05/12/2011 and were received at Accutest on 05/14/2011 properly preserved, at 0.7 Deg. C and intact. These Samples received an Accutest job number of MC227. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

## Volatiles by GCMS By Method SW846 8260B

**Matrix** AQ **Batch ID:** MSN2000

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) MC198-2MS, MC198-2MSD were used as the QC samples indicated.
- MSN2000-BS/BSD for 2-Chloroethyl vinyl ether, Vinyl Acetate are outside control limits. Blank Spike meets program technical requirements.
- MC198-2MS/MSD for 2-Chloroethyl vinyl ether, Acetone are outside control limits due to possible matrix interference. Refer to Blank Spike.
- MC198-2MS/MSD for Acrylonitrile, Acrolein are outside control limits. Associated samples are non-detect for this compound.
- MSN2000-BSD for Acetone: Outside control limits. Blank Spike meets program technical requirements.
- MSN2000-BS/BSD for Acrolein, Acrylonitrile are outside control limits. Associated samples are non-detect for this compound.

**Matrix** SO **Batch ID:** MSP1770

- All samples were analyzed within the recommended method holding time.
- Sample(s) MC407-1MS, MC407-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- Blank Spike Recovery(s) for 1,2,3-Trichlorobenzene, 2,2-Dichloropropane, Acrolein, Bromoform, Naphthalene, Styrene are outside control limits. Associated samples are non-detect for this compound.
- MC407-1MS/MSD for Acetone, 1,4-Dioxane, Naphthalene: Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MC407-1MS/MSD for Acrolein, Bromoform, 2,2-Dichloropropane: Outside control limits. Associated samples are non-detect for this compound.
- RPD(s) for MSD for Styrene are outside control limits for sample MC407-1MSD. High RPD due to possible matrix interference and/or sample non-homogeneity.
- MC407-1MSD for sec-Butylbenzene, tert-Butylbenzene, 1,2-Dibromo-3-chloropropane, Dibromochloromethane, Isopropylbenzene, p-Isopropyltoluene, Methyl Tert Butyl Ether, 1,1,2,2-Tetrachloroethane, 1,2,3-Trichloropropane, 1,2,4-Trimethylbenzene, 1,3,5-Trimethylbenzene : Outside control limits due to possible matrix interference. Refer to Blank Spike.
- MC407-1MS for Chloromethane, Styrene, 1,2,3-Trichlorobenzene, 1,2,4-Trichlorobenzene : Outside control limits due to possible matrix interference. Refer to Blank Spike.

## Sample Results

Report of Analysis

## Extractables by GCMS By Method SW846 8270C

| Matrix SO | Batch ID: OP24969 |
|---|---|

- All samples were extracted within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- Sample(s) MC125-5MS, MC125-5MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- MC125-5MS/MSD for Hexachlorocyclopentadiene are outside control limits due to possible matrix interference. Refer to Blank Spike.

## Wet Chemistry By Method SM21 2540 B MOD.

| Matrix SO | Batch ID: GN34937 |
|---|---|

- Sample(s) MC227-1DUP were used as the QC samples for Solids, Percent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety.The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(MC227).

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-4-10-12' | | |
| Lab Sample ID: | MC227-1 | Date Sampled: | 05/12/11 |
| Matrix: | SO - Soil | Date Received: | 05/14/11 |
| Method: | SW846 8260B | Percent Solids: | 91.7 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | P53342.D | 1 | 05/26/11 | AMY | n/a | n/a | MSP1770 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 4.12 g | 5.0 ml |
| Run #2 | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 6.6 | 6.6 | ug/kg | |
| 107-02-8 | Acrolein | ND | 33 | 22 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 6.6 | 2.7 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.66 | 0.17 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 6.6 | 0.25 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 6.6 | 1.4 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.6 | 0.98 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.6 | 0.62 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.6 | 0.89 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 6.6 | 1.6 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 6.6 | 1.7 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 6.6 | 0.22 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 6.6 | 0.86 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 6.6 | 1.3 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.6 | 2.6 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.6 | 1.6 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 6.6 | 0.34 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 6.6 | 6.6 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.6 | 1.3 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 6.6 | 6.6 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 6.6 | 0.18 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 6.6 | 1.5 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 6.6 | 6.6 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.6 | 0.86 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.6 | 0.25 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.6 | 0.20 | ug/kg | |
| 541-73-1 | 1,3-Dichlorohenzene | ND | 2.6 | 0.19 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.6 | 0.19 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.6 | 0.45 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.6 | 0.20 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.6 | 1.4 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.6 | 0.42 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-4-10-12' | | |
| Lab Sample ID: | MC227-1 | Date Sampled: | 05/12/11 |
| Matrix: | SO - Soil | Date Received: | 05/14/11 |
| Method: | SW846 8260B | Percent Solids: | 91.7 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.6 | 0.36 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.6 | 1.3 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.6 | 0.30 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 6.6 | 1.5 | ug/kg | |
| 594-20-7 | 2,2-Dichloropropane | ND | 6.6 | 0.24 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 6.6 | 0.25 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.6 | 1.3 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.6 | 0.91 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 33 | 33 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 6.6 | 4.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.6 | 0.17 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 6.6 | 6.6 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 6.6 | 6.6 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 6.6 | 0.21 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 6.6 | 0.21 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.6 | 0.82 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 6.6 | 6.6 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 6.6 | 0.40 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.6 | 1.6 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 6.6 | 6.6 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 6.6 | 0.21 | ug/kg | |
| 100-42-5 | Styrene | ND | 6.6 | 0.66 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 6.6 | 1.3 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.6 | 0.23 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.6 | 0.22 | ug/kg | |
| 108-88-3 | Toluene | ND | 6.6 | 0.24 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 6.6 | 1.5 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 6.6 | 6.6 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.6 | 1.3 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.6 | 0.34 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.6 | 0.26 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.6 | 1.2 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 6.6 | 0.28 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 6.6 | 0.21 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 6.6 | 0.24 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 6.6 | 1.6 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.6 | 2.6 | ug/kg | |
| | m,p-Xylene | ND | 2.6 | 0.33 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.6 | 0.24 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.6 | 0.58 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-4-10-12' | | |
| Lab Sample ID: | MC227-1 | Date Sampled: | 05/12/11 |
| Matrix: | SO - Soil | Date Received: | 05/14/11 |
| Method: | SW846 8260B | Percent Solids: | 91.7 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 126% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 120% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 104% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-4-10-12' | | |
| Lab Sample ID: | MC227-1 | Date Sampled: | 05/12/11 |
| Matrix: | SO - Soil | Date Received: | 05/14/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 91.7 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | I72794.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |
| Run #2 | | | | | | | |

| | Initial Weight | Final Volume |
|---|---|---|
| Run #1 | 20.0 g | 1.0 ml |
| Run #2 | | |

ABN Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | ND | 540 | 42 | ug/kg | |
| 95-57-8 | 2-Chlorophenol | ND | 270 | 15 | ug/kg | |
| 59-50-7 | 4-Chloro-3-methyl phenol | ND | 540 | 19 | ug/kg | |
| 120-83-2 | 2,4-Dichlorophenol | ND | 540 | 32 | ug/kg | |
| 105-67-9 | 2,4-Dimethylphenol | ND | 540 | 54 | ug/kg | |
| 51-28-5 | 2,4-Dinitrophenol | ND | 1100 | 270 | ug/kg | |
| 534-52-1 | 4,6-Dinitro-o-cresol | ND | 540 | 270 | ug/kg | |
| 95-48-7 | 2-Methylphenol | ND | 540 | 16 | ug/kg | |
| | 3&4-Methylphenol | ND | 540 | 29 | ug/kg | |
| 88-75-5 | 2-Nitrophenol | ND | 540 | 33 | ug/kg | |
| 100-02-7 | 4-Nitrophenol | ND | 1100 | 270 | ug/kg | |
| 87-86-5 | Pentachlorophenol | ND | 540 | 51 | ug/kg | |
| 108-95-2 | Phenol | ND | 270 | 45 | ug/kg | |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | 540 | 41 | ug/kg | |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | 540 | 38 | ug/kg | |
| 83-32-9 | Acenaphthene | ND | 270 | 23 | ug/kg | |
| 208-96-8 | Acenaphthylene | ND | 270 | 20 | ug/kg | |
| 62-53-3 | Aniline | ND | 540 | 540 | ug/kg | |
| 120-12-7 | Anthracene | ND | 270 | 21 | ug/kg | |
| 56-55-3 | Benzo(a)anthracene | ND | 270 | 10 | ug/kg | |
| 50-32-8 | Benzo(a)pyrene | ND | 270 | 16 | ug/kg | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 270 | 32 | ug/kg | |
| 191-24-2 | Benzo(g,h,i)perylene | ND | 270 | 18 | ug/kg | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 270 | 8.1 | ug/kg | |
| 101-55-3 | 4-Bromophenyl phenyl ether | ND | 270 | 22 | ug/kg | |
| 85-68-7 | Butyl benzyl phthalate | ND | 270 | 12 | ug/kg | |
| 100-51-6 | Benzyl Alcohol | ND | 540 | 33 | ug/kg | |
| 91-58-7 | 2-Chloronaphthalene | ND | 270 | 23 | ug/kg | |
| 106-47-8 | 4-Chloroaniline | ND | 540 | 140 | ug/kg | |
| 218-01-9 | Chrysene | ND | 270 | 8.9 | ug/kg | |
| 111-91-1 | bis(2-Chloroethoxy)methane | ND | 270 | 21 | ug/kg | |
| 111-44-4 | bis(2-Chloroethyl)ether | ND | 270 | 5.8 | ug/kg | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-4-10-12' | | |
| Lab Sample ID: | MC227-1 | Date Sampled: | 05/12/11 |
| Matrix: | SO - Soil | Date Received: | 05/14/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 91.7 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

ABN Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 108-60-1 | bis(2-Chloroisopropyl)ether | ND | 270 | 26 | ug/kg | |
| 7005-72-3 | 4-Chlorophenyl phenyl ether | ND | 270 | 24 | ug/kg | |
| 122-66-7 | 1,2-Diphenylhydrazine | ND | 270 | 23 | ug/kg | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | 540 | 140 | ug/kg | |
| 606-20-2 | 2,6-Dinitrotoluene | ND | 540 | 26 | ug/kg | |
| 91-94-1 | 3,3'-Dichlorobenzidine | ND | 270 | 6.5 | ug/kg | |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | 270 | 18 | ug/kg | |
| 132-64-9 | Dibenzofuran | ND | 270 | 23 | ug/kg | |
| 84-74-2 | Di-n-butyl phthalate | ND | 270 | 25 | ug/kg | |
| 117-84-0 | Di-n-octyl phthalate | ND | 270 | 14 | ug/kg | |
| 84-66-2 | Diethyl phthalate | ND | 270 | 24 | ug/kg | |
| 131-11-3 | Dimethyl phthalate | ND | 270 | 19 | ug/kg | |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | ND | 270 | 19 | ug/kg | |
| 206-44-0 | Fluoranthene | ND | 270 | 9.3 | ug/kg | |
| 86-73-7 | Fluorene | ND | 270 | 6.0 | ug/kg | |
| 118-74-1 | Hexachlorobenzene | ND | 270 | 23 | ug/kg | |
| 77-47-4 | Hexachlorocyclopentadiene | ND | 540 | 3.7 | ug/kg | |
| 67-72-1 | Hexachloroethane | ND | 270 | 22 | ug/kg | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 270 | 17 | ug/kg | |
| 78-59-1 | Isophorone | ND | 270 | 27 | ug/kg | |
| 90-12-0 | 1-Methylnaphthalene | ND | 270 | 270 | ug/kg | |
| 91-57-6 | 2-Methylnaphthalene | ND | 270 | 23 | ug/kg | |
| 88-74-4 | 2-Nitroaniline | ND | 540 | 140 | ug/kg | |
| 99-09-2 | 3-Nitroaniline | ND | 540 | 140 | ug/kg | |
| 100-01-6 | 4-Nitroaniline | ND | 540 | 20 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 270 | 6.3 | ug/kg | |
| 98-95-3 | Nitrobenzene | ND | 270 | 8.1 | ug/kg | |
| 62-75-9 | n-Nitrosodimethylamine | ND | 270 | 22 | ug/kg | |
| 621-64-7 | N-Nitroso-di-n-propylamine | ND | 270 | 17 | ug/kg | |
| 86-30-6 | N-Nitrosodiphenylamine | ND | 270 | 14 | ug/kg | |
| 85-01-8 | Phenanthrene | ND | 270 | 7.0 | ug/kg | |
| 129-00-0 | Pyrene | ND | 270 | 8.8 | ug/kg | |
| 110-86-1 | Pyridine | ND | 540 | 540 | ng/kg | |

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 68% | | 30-130% |
| 4165-62-2 | Phenol-d5 | 67% | | 30-130% |
| 118-79-6 | 2,4,6-Tribromophenol | 65% | | 30-130% |
| 4165-60-0 | Nitrobenzene-d5 | 59% | | 30-130% |

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J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis



3.1

| | | | |
|---|---|---|---|
| Client Sample ID: | SVE-4-10-12' | | |
| Lab Sample ID: | MC227-1 | Date Sampled: | 05/12/11 |
| Matrix: | SO - Soil | Date Received: | 05/14/11 |
| Method: | SW846 8270C SW846 3546 | Percent Solids: | 91.7 |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

ABN Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 321-60-8 | 2-Fluorobiphenyl | 65% | | 30-130% |
| 1718-51-0 | Terphenyl-d14 | 83% | | 30-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB051211 | | |
| Lab Sample ID: | MC227-2 | Date Sampled: | 05/12/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 05/14/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

| | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| Run #1 | N53024.D | 1 | 05/25/11 | MC | n/a | n/a | MSN2000 |
| Run #2 | | | | | | | |

| | Purge Volume |
|---|---|
| Run #1 | 5.0 ml |
| Run #2 | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB051211 | | |
| Lab Sample ID: | MC227-2 | Date Sampled: | 05/12/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 05/14/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ng/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ng/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

# Report of Analysis





| | | | |
|---|---|---|---|
| Client Sample ID: | TB051211 | | |
| Lab Sample ID: | MC227-2 | Date Sampled: | 05/12/11 |
| Matrix: | AQ - Trip Blank Water | Date Received: | 05/14/11 |
| Method: | SW846 8260B | Percent Solids: | n/a |
| Project: | URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL | | |

VOA Special List

| CAS No. | Surrogate Recoveries | Run# 1 | Run# 2 | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 100% | | 70-130% |
| 2037-26-5 | Toluene-D8 | 107% | | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | | 70-130% |

ND = Not detected MDL - Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

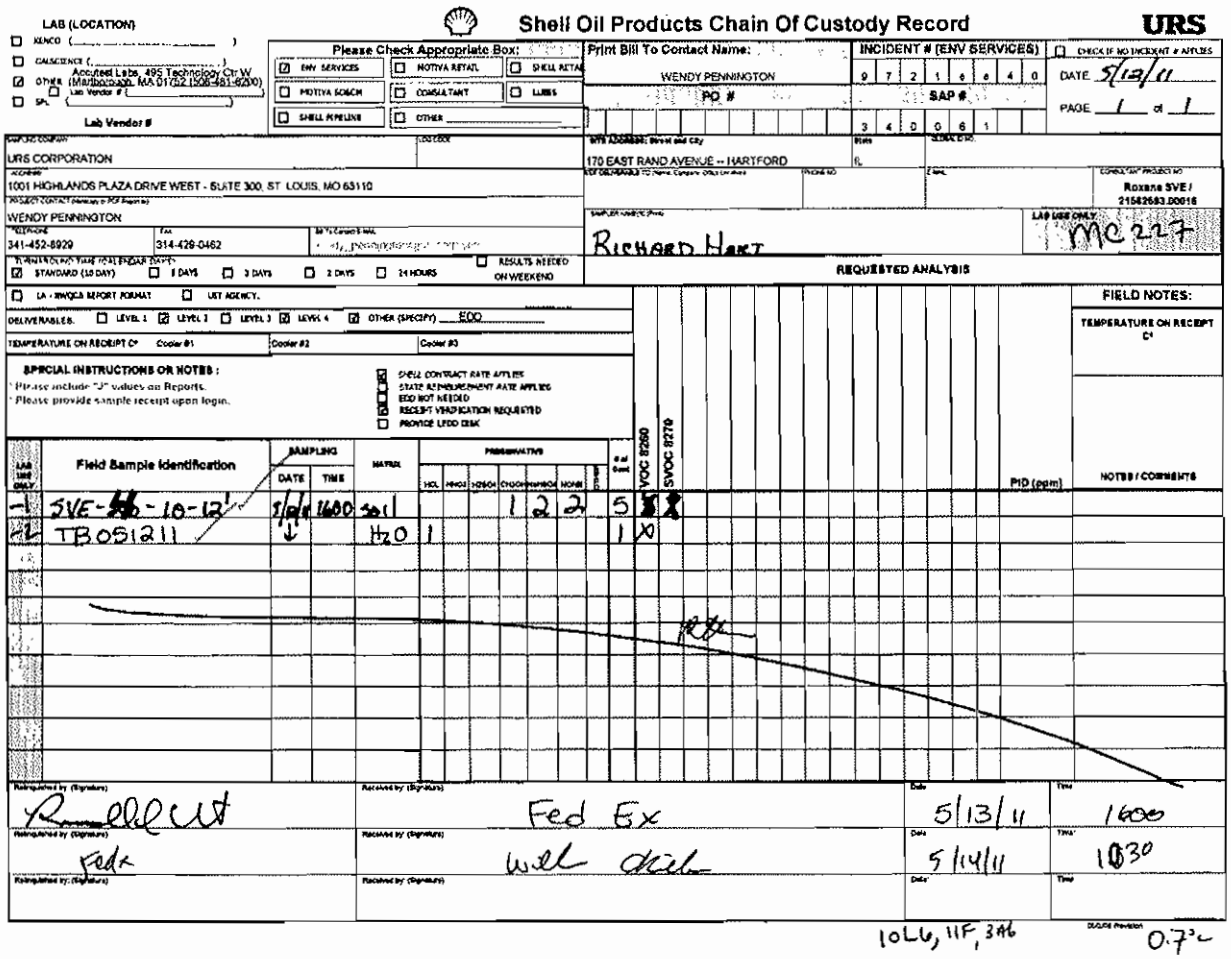
J = Indicates an estimated value
B = Indicates analyte found iu associated method blank
N = Indicates presumptive evidence of a compound

## Misc. Forms

# Custody Documents and Other Forms

Includes the following where applicable:

- Certification Exceptions
- Certification Exceptions (IL)
- Chain of Custody
- Sample Tracking Chronicle
- Internal Chain of Custody



# Shell Oil Products Chain Of Custody Record

URS

LAB (LOCATION)
- ☐ KENCO ( )
- ☐ CALSCIENCE ( )
- ☑ OTHER Accutest Labs, 495 Technology Ctr W (Marlborough, MA 01752 (508-481-6200))
- ☐ SPL ( Lab Vendor # )

Lab Vendor #

Please Check Appropriate Box:
- ☑ ENV SERVICES
- ☐ MOTIVA RETAIL
- ☐ SHELL RETAIL
- ☐ MOTIVA SOECH
- ☐ CONSULTANT
- ☐ LUBES
- ☐ SHELL PIPELINE
- ☐ OTHER

Print Bill To Contact Name: WENDY PENNINGTON

PO #

INCIDENT # (ENV SERVICES): 9 7 2 1 6 6 4 0

SAP #: 3 4 0 0 6 1

☐ CHECK IF NO INCIDENT # APPLIES

DATE 5/12/11

PAGE 1 of 1

| | |
|---|---|
| SAMPLING COMPANY | URS CORPORATION |
| LOG CODE | |
| SITE ADDRESS: Street and City | 170 EAST RAND AVENUE -- HARTFORD |
| State | IL |
| GLOBAL ID NO. | |
| ADDRESS | 1001 HIGHLANDS PLAZA DRIVE WEST - SUITE 300, ST. LOUIS, MO 63110 |
| PROJECT CONTACT (Attention to PCF Reporter) | WENDY PENNINGTON |
| TELEPHONE | 341-452-8929 |
| FAX | 314-429-0462 |
| SITE Contact E-MAIL | |
| TURNAROUND TIME (CALENDAR DAYS) | ☑ STANDARD (10 DAY) ☐ 5 DAYS ☐ 3 DAYS ☐ 2 DAYS ☐ 24 HOURS ☐ RESULTS NEEDED ON WEEKEND |
| SAMPLER NAME (Print) | RICHARD HART |
| LAB USE ONLY | MC227 |
| CONSULTANT PROJECT NO. | Roxana SVE / 21582683.00016 |

REQUESTED ANALYSIS

☐ LA - RWQCB REPORT FORMAT ☐ UST AGENCY

DELIVERABLES: ☐ LEVEL 1 ☑ LEVEL 2 ☐ LEVEL 3 ☑ LEVEL 4 ☑ OTHER (SPECIFY) EDD

TEMPERATURE ON RECEIPT C° Cooler #1 Cooler #2 Cooler #3

SPECIAL INSTRUCTIONS OR NOTES:
- Please include "J" values on Reports.
- Please provide sample receipt upon login.

- ☑ SHELL CONTRACT RATE APPLIES
- ☐ STATE REIMBURSEMENT RATE APPLIES
- ☐ EDD NOT NEEDED
- ☑ RECEIPT VERIFICATION REQUESTED
- ☐ PROVIDE LEDD DISK

FIELD NOTES:

TEMPERATURE ON RECEIPT C°

| LAB USE ONLY | Field Sample Identification | SAMPLING DATE | SAMPLING TIME | MATRIX | PRESERVATIVE HCL | HNO3 | H2SO4 | CH3OH | NaHSO4 | NONE | OTHER | # of Cont | VOC 8260 | SVOC 8270 | PID (ppm) | NOTES / COMMENTS |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -1 | SVE-~~46~~-10-12' | 5/12/11 | 1600 | soil | | | | 1 | 2 | 2 | | 5 | X | X | | |
| -2 | TB051211 | ↓ | | $H_2O$ | 1 | | | | | | | 1 | X | | | |

| Relinquished by (Signature) | Received by (Signature) | Date | Time |
|---|---|---|---|
| [signature] | Fed Ex | 5/13/11 | 1600 |
| Fedx | [signature] | 5/14/11 | 1030 |
| | | | |

10L6, 11F, 3A6

DEQUIS Revision 0.7°C

MC227: Chain of Custody
Page 1 of 2

ACCUTEST LABORATORIES

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: MC227 Client: URS Immediate Client Services Action Required: No

Date / Time Received: 5/14/2011 Delivery Method: Client Service Action Required at Login: No

Project: 170 EAST RAND AVE,HART.,CT No. Coolers: 1 Airbill #'s: N/A

| Cooler Security | Y or N | | Y or N |
|---|---|---|---|
| 1. Custody Seals Present: | ☑ ☐ | 3. COC Present: | ☑ ☐ |
| 2 Custody Seals Intact. | ☑ ☐ | 4. Smpl Dates/Time OK | ☑ ☐ |

| Cooler Temperature | Y or N |
|---|---|
| 1. Temp criteria achieved: | ☑ ☐ |
| 2. Cooler temp verification. | Infared gun |
| 3. Cooler media: | Ice (bag) |

| Quality Control Preservatio | Y or N | N/A |
|---|---|---|
| 1. Trip Blank present / cooler: | ☑ ☐ | ☐ |
| 2. Trip Blank listed on COC: | ☑ ☐ | ☐ |
| 3. Samples preserved properly. | ☑ ☐ | |
| 4. VOCs headspace free: | ☑ ☐ | ☐ |

| Sample Integrity - Documentation | Y or N |
|---|---|
| 1. Sample labels present on bottles: | ☑ ☐ |
| 2. Container labeling complete: | ☑ ☐ |
| 3. Sample container label / COC agree: | ☑ ☐ |

| Sample Integrity - Condition | Y or N |
|---|---|
| 1. Sample recvd within HT: | ☑ ☐ |
| 2. All containers accounted for: | ☑ ☐ |
| 3 Condition of semple: | Intact |

| Sample Integrity - Instructions | Y or N | N/A |
|---|---|---|
| 1. Analysis requested is clear: | ☑ ☐ | |
| 2. Bottles received for unspecified tests | ☐ ☑ | |
| 3. Sufficient volume recvd for analysis: | ☑ ☐ | |
| 4. Compositing instructions clear. | ☐ ☐ | ☑ |
| 5. Filtering instructions clear: | ☐ ☐ | ☑ |

Comments

Accutest Laboratories
V 508.481.6200
495 Technology Center West, Bldg One
F 508.481.7753
Marlborough, MA
www.accutest.com

4.1 4

**MC227: Chain of Custody**
**Page 2 of 2**

# Internal Sample Tracking Chronicle

Shell Oil

Job No: MC227

URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL
Project No: INC#97216640 / SAP#340061

| Sample Number | Method | Analyzed | By | Prepped | By | Test Codes |
|---|---|---|---|---|---|---|
| MC227-1 | Collected: 12-MAY-11 16:00 By: RH | | Received: 14-MAY-11 By: | | | |
| SVE-4-10-12' | | | | | | |
| MC227-1 | SM21 2540 B MOD. | 18-MAY-11 | BF | | | %SOL |
| MC227-1 | SW846 8270C | 24-MAY-11 18:23 | KR | 18-MAY-11 | FC | AB8270SL |
| MC227-1 | SW846 8260B | 26-MAY-11 20:11 | AMY | | | V8260SL |
| MC227-2 | Collected: 12-MAY-11 00:00 By: RH | | Received: 14-MAY-11 By: | | | |
| TB051211 | | | | | | |
| MC227-2 | SW846 8260B | 25-MAY-11 18:40 | MC | | | V8260SL |

# Accutest Internal Chain of Custody



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL
Received: 05/14/11



| Sample.Bottle Number | Transfer FROM | Transfer TO | Date/Time | Reason |
|---|---|---|---|---|
| MC227-1.1 | Walk In Ref #9 | Bijan Firowznin | 05/18/11 10:12 | Retrieve from Storage |
| MC227-1.1 | Bijan Firowznin | Walk In Ref #9 | 05/18/11 11:25 | Return to Storage |
| MC227-1.2 | Walk In Ref #9 | Michael Rolo | 05/18/11 16:09 | Retrieve from Storage |
| MC227-1.2 | Michael Rolo | Walk In Ref #9 | 05/18/11 22:38 | Return to Storage |
| MC227-1.3 | VOC Ref #10 | Amy Min Yang | 05/26/11 16:30 | Retrieve from Storage |
| MC227-1.3 | Amy Min Yang | GCMSP | 05/26/11 16:30 | Load on Instrument |
| MC227-1.3 | GCMSP | Amy Min Yang | 05/31/11 07:44 | Unload from Instrument |
| MC227-1.3 | Amy Min Yang | VOC Ref #10 | 05/31/11 07:44 | Return to Storage |
| MC227-1.4 | VOC Ref #10 | Amy Min Yang | 05/25/11 18:18 | Retrieve from Storage |
| MC227-1.4 | Amy Min Yang | GCMSP | 05/25/11 18:18 | Load on Instrument |
| MC227-1.4 | GCMSP | Amy Min Yang | 05/25/11 18:21 | Unload from Instrument |
| MC227-1.4 | Amy Min Yang | VOC Ref #10 | 05/25/11 18:21 | Return to Storage |
| MC227-1.4 | VOC Ref #10 | Amy Min Yang | 05/26/11 16:30 | Retrieve from Storage |
| MC227-1.4 | Amy Min Yang | GCMSP | 05/26/11 16:30 | Load on Instrument |
| MC227-1.4 | GCMSP | Amy Min Yang | 05/31/11 07:44 | Unload from Instrument |
| MC227-1.4 | Amy Min Yang | VOC Ref #10 | 05/31/11 07:44 | Return to Storage |
| MC227-1.5 | VOC Ref #10 | Gary Krasinski | 05/18/11 12:02 | Retrieve from Storage |
| MC227-1.5 | Gary Krasinski | VOC Ref #10 | 05/19/11 10:33 | Return to Storage |
| MC227-2.1 | VOC Ref #3 | Jugal Patel | 05/24/11 15:01 | Retrieve from Storage |
| MC227-2.1 | Jugal Patel | GCMSN | 05/24/11 15:01 | Load on Instrument |
| MC227-2.1 | GCMSN | Jugal Patel | 05/26/11 10:12 | Unload from Instrument |
| MC227-2.1 | Jugal Patel | VOC Ref #3 | 05/26/11 10:12 | Return to Storage |

## GC/MS Volatiles

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# QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2000-MB | N53023.D | 1 | 05/25/11 | MC | n/a | n/a | MSN2000 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC227-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 4.1 | ug/l | |
| 107-02-8 | Acrolein | ND | 25 | 13 | ug/l | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 4.3 | ug/l | |
| 71-43-2 | Benzene | ND | 0.50 | 0.46 | ug/l | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.99 | ug/l | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 0.92 | ug/l | |
| 75-27-4 | Bromodichloromethane | ND | 1.0 | 0.49 | ug/l | |
| 75-25-2 | Bromoform | ND | 1.0 | 0.71 | ug/l | |
| 74-83-9 | Bromomethane | ND | 2.0 | 1.3 | ug/l | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 2.7 | ug/l | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.1 | ug/l | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 1.0 | ug/l | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.82 | ug/l | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.62 | ug/l | |
| 56-23-5 | Carbon tetrachloride | ND | 1.0 | 0.58 | ug/l | |
| 108-90-7 | Chlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 75-00-3 | Chloroethane | ND | 2.0 | 0.32 | ug/l | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/l | |
| 67-66-3 | Chloroform | ND | 1.0 | 0.58 | ug/l | |
| 74-87-3 | Chloromethane | ND | 2.0 | 0.71 | ug/l | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 1.1 | ug/l | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 0.98 | ug/l | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 1.6 | ug/l | |
| 124-48-1 | Dibromochloromethane | ND | 1.0 | 0.89 | ug/l | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.48 | ug/l | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 1.0 | 0.41 | ug/l | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 1.0 | 0.44 | ug/l | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 1.0 | 0.42 | ug/l | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 1.1 | ug/l | |
| 75-34-3 | 1,1-Dichloroethane | ND | 1.0 | 0.33 | ug/l | |
| 107-06-2 | 1,2-Dichloroethane | ND | 1.0 | 0.44 | ug/l | |
| 75-35-4 | 1,1-Dichloroethene | ND | 1.0 | 0.80 | ug/l | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 1.0 | 0.69 | ug/l | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 1.0 | 0.64 | ug/l | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.71 | ug/l | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 0.75 | ug/l | |

# Method Blank Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2000-MB | N53023.D | 1 | 05/25/11 | MC | n/a | n/a | MSN2000 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC227-2

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.97 | ug/l | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.78 | ug/l | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 0.50 | 0.41 | ug/l | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 0.50 | 0.49 | ug/l | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/l | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 0.70 | ug/l | |
| 100-41-4 | Ethylbenzene | ND | 1.0 | 0.80 | ug/l | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 1.2 | ug/l | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 1.3 | ug/l | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.94 | ug/l | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.88 | ug/l | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 1.0 | 0.61 | ug/l | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 0.76 | ug/l | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.52 | ug/l | |
| 75-09-2 | Methyleue chloride | ND | 2.0 | 0.99 | ug/l | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/l | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.89 | ug/l | |
| 100-42-5 | Styrene | ND | 5.0 | 0.97 | ug/l | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 0.83 | ug/l | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 1.0 | 0.79 | ug/l | |
| 127-18-4 | Tetrachloroethene | ND | 1.0 | 0.36 | ug/l | |
| 108-88-3 | Toluene | ND | 1.0 | 0.59 | ug/l | |
| 87-61-6 | 1,2,3-Trichlorobenzeue | ND | 5.0 | 1.1 | ug/l | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 1.0 | ug/l | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 1.0 | 0.55 | ug/l | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 1.0 | 0.74 | ug/l | |
| 79-01-6 | Trichloroethene | ND | 1.0 | 0.75 | ug/l | |
| 75-69-4 | Trichlorofluoromethane | ND | 1.0 | 0.40 | ug/l | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.70 | ug/l | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.98 | ug/l | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.90 | ug/l | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.1 | ug/l | |
| 75-01-4 | Vinyl chloride | ND | 1.0 | 0.82 | ug/l | |
| | m,p-Xylene | ND | 1.0 | 0.90 | ug/l | |
| 95-47-6 | o-Xylene | ND | 1.0 | 0.32 | ug/l | |
| 1330-20-7 | Xylene (total) | ND | 1.0 | 0.32 | ug/l | |

# Method Blank Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2000-MB | N53023.D | 1 | 05/25/11 | MC | n/a | n/a | MSN2000 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC227-2

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | 70-130% |
| 2037-26-5 | Toluene-D8 | 106% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 100% | 70-130% |

# Method Blank Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1770-MB | P53340.D | 1 | 05/26/11 | AMY | n/a | n/a | MSP1770 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC227-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | ND | 5.0 | 5.0 | ug/kg | |
| 107-02-8 | Acrolein | ND | 25 | 17 | ug/kg | |
| 107-13-1 | Acrylonitrile | ND | 5.0 | 2.0 | ug/kg | |
| 71-43-2 | Benzene | ND | 0.50 | 0.13 | ug/kg | |
| 108-86-1 | Bromobenzene | ND | 5.0 | 0.19 | ug/kg | |
| 74-97-5 | Bromochloromethane | ND | 5.0 | 1.0 | ug/kg | |
| 75-27-4 | Bromodichloromethane | ND | 2.0 | 0.74 | ug/kg | |
| 75-25-2 | Bromoform | ND | 2.0 | 0.47 | ug/kg | |
| 74-83-9 | Bromomethane | ND | 2.0 | 0.68 | ug/kg | |
| 78-93-3 | 2-Butanone (MEK) | ND | 5.0 | 1.2 | ug/kg | |
| 104-51-8 | n-Butylbenzene | ND | 5.0 | 1.3 | ug/kg | |
| 135-98-8 | sec-Butylbenzene | ND | 5.0 | 0.17 | ug/kg | |
| 98-06-6 | tert-Butylbenzene | ND | 5.0 | 0.65 | ug/kg | |
| 75-15-0 | Carbon disulfide | ND | 5.0 | 0.97 | ug/kg | |
| 56-23-5 | Carbon tetrachloride | ND | 2.0 | 2.0 | ug/kg | |
| 108-90-7 | Chlorobenzene | ND | 2.0 | 1.2 | ug/kg | |
| 75-00-3 | Chloroethane | ND | 5.0 | 0.26 | ug/kg | |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | 5.0 | 5.0 | ug/kg | |
| 67-66-3 | Chloroform | ND | 2.0 | 0.96 | ug/kg | |
| 74-87-3 | Chloromethane | ND | 5.0 | 5.0 | ug/kg | |
| 95-49-8 | o-Chlorotoluene | ND | 5.0 | 0.14 | ug/kg | |
| 106-43-4 | p-Chlorotoluene | ND | 5.0 | 1.1 | ug/kg | |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | 5.0 | 5.0 | ug/kg | |
| 124-48-1 | Dibromochloromethane | ND | 2.0 | 0.65 | ug/kg | |
| 106-93-4 | 1,2-Dibromoethane | ND | 2.0 | 0.19 | ug/kg | |
| 95-50-1 | 1,2-Dichlorobenzene | ND | 2.0 | 0.15 | ug/kg | |
| 541-73-1 | 1,3-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 106-46-7 | 1,4-Dichlorobenzene | ND | 2.0 | 0.14 | ug/kg | |
| 75-71-8 | Dichlorodifluoromethane | ND | 2.0 | 0.34 | ug/kg | |
| 75-34-3 | 1,1-Dichloroethane | ND | 2.0 | 0.15 | ug/kg | |
| 107-06-2 | 1,2-Dichloroethane | ND | 2.0 | 1.1 | ug/kg | |
| 75-35-4 | 1,1-Dichloroethene | ND | 2.0 | 0.32 | ug/kg | |
| 156-59-2 | cis-1,2-Dichloroethene | ND | 2.0 | 0.27 | ug/kg | |
| 156-60-5 | trans-1,2-Dichloroethene | ND | 2.0 | 0.99 | ug/kg | |
| 78-87-5 | 1,2-Dichloropropane | ND | 2.0 | 0.23 | ug/kg | |
| 142-28-9 | 1,3-Dichloropropane | ND | 5.0 | 1.2 | ug/kg | |

# Method Blank Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1770-MB | P53340.D | 1 | 05/26/11 | AMY | n/a | n/a | MSP1770 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC227-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | 5.0 | 0.18 | ug/kg | |
| 563-58-6 | 1,1-Dichloropropene | ND | 5.0 | 0.19 | ug/kg | |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | 2.0 | 1.0 | ug/kg | |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | 2.0 | 0.68 | ug/kg | |
| 123-91-1 | 1,4-Dioxane | ND | 25 | 25 | ug/kg | |
| 97-63-2 | Ethyl methacrylate | ND | 5.0 | 3.1 | ug/kg | |
| 100-41-4 | Ethylbenzene | ND | 2.0 | 0.13 | ug/kg | |
| 87-68-3 | Hexachlorobutadiene | ND | 5.0 | 5.0 | ug/kg | |
| 591-78-6 | 2-Hexanone | ND | 5.0 | 5.0 | ug/kg | |
| 98-82-8 | Isopropylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 99-87-6 | p-Isopropyltoluene | ND | 5.0 | 0.16 | ug/kg | |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | 2.0 | 0.62 | ug/kg | |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | 5.0 | 5.0 | ug/kg | |
| 74-95-3 | Methylene bromide | ND | 5.0 | 0.31 | ug/kg | |
| 75-09-2 | Methylene chloride | ND | 2.0 | 1.2 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 5.0 | 5.0 | ug/kg | |
| 103-65-1 | n-Propylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 100-42-5 | Styrene | ND | 5.0 | 0.50 | ug/kg | |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | 5.0 | 1.0 | ug/kg | |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | 2.0 | 0.18 | ug/kg | |
| 127-18-4 | Tetrachloroethene | ND | 2.0 | 0.17 | ug/kg | |
| 108-88-3 | Toluene | ND | 5.0 | 0.18 | ug/kg | |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | 5.0 | 1.1 | ug/kg | |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | 5.0 | 5.0 | ug/kg | |
| 71-55-6 | 1,1,1-Trichloroethane | ND | 2.0 | 0.97 | ug/kg | |
| 79-00-5 | 1,1,2-Trichloroethane | ND | 2.0 | 0.25 | ug/kg | |
| 79-01-6 | Trichloroethene | ND | 2.0 | 0.20 | ug/kg | |
| 75-69-4 | Trichlorofluoromethane | ND | 2.0 | 0.92 | ug/kg | |
| 96-18-4 | 1,2,3-Trichloropropane | ND | 5.0 | 0.21 | ug/kg | |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | 5.0 | 0.16 | ug/kg | |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | 5.0 | 0.18 | ug/kg | |
| 108-05-4 | Vinyl Acetate | ND | 5.0 | 1.2 | ug/kg | |
| 75-01-4 | Vinyl chloride | ND | 2.0 | 2.0 | ug/kg | |
| | m,p-Xylene | ND | 2.0 | 0.25 | ug/kg | |
| 95-47-6 | o-Xylene | ND | 2.0 | 0.18 | ug/kg | |
| 1330-20-7 | Xylene (total) | ND | 2.0 | 0.44 | ug/kg | |

# Method Blank Summary

Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1770-MB | P53340.D | 1 | 05/26/11 | AMY | n/a | n/a | MSP1770 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC227-1

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 115% | 70-130% |
| 2037-26-5 | Toluene-D8 | 125% | 70-130% |
| 460-00-4 | 4-Bromoflnorobenzene | 99% | 70-130% |

# Blank Spike Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1770-BS | P53338.D | 1 | 05/26/11 | AMY | n/a | n/a | MSP1770 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC227-1

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 67-64-I | Acetone | 50 | 36.1 | 72 | 70-130 |
| 107-02-8 | Acrolein | 250 | 637 | 255* a | 70-130 |
| 107-13-1 | Acrylonitrile | 50 | 41.7 | 83 | 70-130 |
| 71-43-2 | Benzene | 50 | 53.6 | 107 | 70-130 |
| 108-86-1 | Bromobenzene | 50 | 57.9 | 116 | 70-130 |
| 74-97-5 | Bromochloromethane | 50 | 59.4 | 119 | 70-130 |
| 75-27-4 | Bromodichloromethane | 50 | 59.3 | 119 | 70-130 |
| 75-25-2 | Bromoform | 50 | 65.7 | 131* a | 70-130 |
| 74-83-9 | Bromomethane | 50 | 47.6 | 95 | 70-130 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 42.8 | 86 | 70-130 |
| 104-51-8 | n-Butylbenzene | 50 | 59.2 | 118 | 70-130 |
| 135-98-8 | sec-Butylbenzene | 50 | 59.1 | 118 | 70-130 |
| 98-06-6 | tert-Butylbenzene | 50 | 58.3 | 117 | 70-130 |
| 75-15-0 | Carbon disulfide | 50 | 47.3 | 95 | 70-130 |
| 56-23-5 | Carbon tetrachloride | 50 | 63.9 | 128 | 70-130 |
| 108-90-7 | Chlorobenzene | 50 | 59.1 | 118 | 70-130 |
| 75-00-3 | Chloroethane | 50 | 55.1 | 110 | 70-130 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 48.0 | 96 | 10-160 |
| 67-66-3 | Chloroform | 50 | 52.0 | 104 | 70-130 |
| 74-87-3 | Chloromethane | 50 | 45.7 | 91 | 70-130 |
| 95-49-8 | o-Chlorotoluene | 50 | 54.1 | 108 | 70-130 |
| 106-43-4 | p-Chlorotoluene | 50 | 57.8 | 116 | 70-130 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 58.9 | 118 | 70-130 |
| 124-48-1 | Dibromochloromethane | 50 | 62.4 | 125 | 70-130 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 57.0 | 114 | 70-130 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 58.3 | 117 | 70-130 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 57.6 | 115 | 70-130 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 57.8 | 116 | 70-130 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 60.1 | 120 | 70-130 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 46.7 | 93 | 70-130 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 56.6 | 113 | 70-130 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 52.2 | 104 | 70-130 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 51.7 | 103 | 70-130 |
| 156-60-5 | trans-1,2-Dichloroethene | 50 | 50.7 | 101 | 70-130 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 48.4 | 97 | 70-130 |
| 142-28-9 | 1,3-Dichloropropane | 50 | 55.9 | 112 | 70-130 |

# Blank Spike Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1770-BS | P53338.D | 1 | 05/26/11 | AMY | n/a | n/a | MSP1770 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC227-1

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 69.9 | 140* a | 70-130 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 55.7 | 111 | 70-130 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 55.4 | 111 | 70-130 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 61.8 | 124 | 70-130 |
| 123-91-1 | 1,4-Dioxane | 250 | 281 | 112 | 70-130 |
| 97-63-2 | Ethyl methacrylate | 50 | 52.8 | 106 | 76-141 |
| 100-41-4 | Ethylbenzene | 50 | 59.0 | 118 | 70-130 |
| 87-68-3 | Hexachlorobutadiene | 50 | 60.3 | 121 | 70-130 |
| 591-78-6 | 2-Hexanone | 50 | 45.7 | 91 | 70-130 |
| 98-82-8 | Isopropylbenzene | 50 | 64.0 | 128 | 70-130 |
| 99-87-6 | p-Isopropyltoluene | 50 | 58.8 | 118 | 70-130 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 62.2 | 124 | 70-130 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 44.8 | 90 | 70-130 |
| 74-95-3 | Methylene bromide | 50 | 59.0 | 118 | 70-130 |
| 75-09-2 | Methylene chloride | 50 | 45.4 | 91 | 70-130 |
| 91-20-3 | Naphthalene | 50 | 67.4 | 135* a | 70-130 |
| 103-65-1 | n-Propylbenzene | 50 | 55.6 | 111 | 70-130 |
| 100-42-5 | Styrene | 50 | 67.7 | 135* a | 70-130 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 62.6 | 125 | 70-130 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 47.8 | 96 | 70-130 |
| 127-18-4 | Tetrachloroethene | 50 | 63.0 | 126 | 70-130 |
| 108-88-3 | Toluene | 50 | 58.9 | 118 | 70-130 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 73.2 | 146* a | 70-130 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 61.6 | 123 | 70-130 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 55.7 | 111 | 70-130 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 54.6 | 109 | 70-130 |
| 79-01-6 | Trichloroethene | 50 | 57.7 | 115 | 70-130 |
| 75-69-4 | Trichlorofluoromethane | 50 | 57.3 | 115 | 70-130 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 50.5 | 101 | 70-130 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 60.8 | 122 | 70-130 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 58.5 | 117 | 70-130 |
| 108-05-4 | Vinyl Acetate | 50 | 39.6 | 79 | 70-130 |
| 75-01-4 | Vinyl chloride | 50 | 57.1 | 114 | 70-130 |
| | m,p-Xylene | 100 | 127 | 127 | 70-130 |
| 95-47-6 | o-Xylene | 50 | 64.4 | 129 | 70-130 |
| 1330-20-7 | Xylene (total) | 150 | 191 | 127 | 70-130 |

# Blank Spike Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSP1770-BS | P53338.D | 1 | 05/26/11 | AMY | n/a | n/a | MSP1770 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC227-1

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 110% | 70-130% |
| 2037-26-5 | Toluene-D8 | 118% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | 70-130% |

(a) Outside control limits. Associated samples are non-detect for this compound.

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2000-BS | N53020.D | 1 | 05/25/11 | MC | n/a | n/a | MSN2000 |
| MSN2000-BSD | N53021.D | 1 | 05/25/11 | MC | n/a | n/a | MSN2000 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC227-2

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 50 | 38.8 | 78 | 34.2 | 68* a | 13 | 70-130/25 |
| 107-02-8 | Acrolein | 250 | 672 | 269* b | 658 | 263* b | 2 | 70-130/25 |
| 107-13-1 | Acrylonitrile | 50 | 216 | 432* b | 211 | 422* b | 2 | 70-130/25 |
| 71-43-2 | Benzene | 50 | 53.0 | 106 | 51.1 | 102 | 4 | 70-130/25 |
| 108-86-1 | Bromobenzene | 50 | 56.1 | 112 | 55.3 | 111 | 1 | 70-130/25 |
| 74-97-5 | Bromochloromethane | 50 | 51.3 | 103 | 49.5 | 99 | 4 | 70-130/25 |
| 75-27-4 | Bromodichloromethane | 50 | 58.5 | 117 | 56.7 | 113 | 3 | 70-130/25 |
| 75-25-2 | Bromoform | 50 | 51.8 | 104 | 52.0 | 104 | 0 | 70-130/25 |
| 74-83-9 | Bromomethane | 50 | 52.4 | 105 | 51.8 | 104 | 1 | 70-130/25 |
| 78-93-3 | 2-Butanone (MEK) | 50 | 39.1 | 78 | 36.2 | 72 | 8 | 70-130/25 |
| 104-51-8 | n-Butylbenzene | 50 | 54.1 | 108 | 53.1 | 106 | 2 | 70-130/25 |
| 135-98-8 | sec-Butylbenzene | 50 | 51.8 | 104 | 50.8 | 102 | 2 | 70-130/25 |
| 98-06-6 | tert-Butylbenzene | 50 | 51.6 | 103 | 50.7 | 101 | 2 | 70-130/25 |
| 75-15-0 | Carbon disulfide | 50 | 50.6 | 101 | 48.2 | 96 | 5 | 70-130/25 |
| 56-23-5 | Carbon tetrachloride | 50 | 49.7 | 99 | 47.9 | 96 | 4 | 70-130/25 |
| 108-90-7 | Chlorobenzene | 50 | 54.2 | 108 | 53.0 | 106 | 2 | 70-130/25 |
| 75-00-3 | Chloroethane | 50 | 50.5 | 101 | 46.9 | 94 | 7 | 70-130/25 |
| 110-75-8 | 2-Chloroethyl vinyl ether | 50 | 31.0 | 62* a | 27.7 | 55* a | 11 | 70-130/25 |
| 67-66-3 | Chloroform | 50 | 51.1 | 102 | 49.7 | 99 | 3 | 70-130/25 |
| 74-87-3 | Chloromethane | 50 | 48.0 | 96 | 46.2 | 92 | 4 | 70-130/25 |
| 95-49-8 | o-Chlorotoluene | 50 | 51.0 | 102 | 49.8 | 100 | 2 | 70-130/25 |
| 106-43-4 | p-Chlorotoluene | 50 | 52.7 | 105 | 52.4 | 105 | 1 | 70-130/25 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | 50 | 45.6 | 91 | 45.9 | 92 | 1 | 70-130/25 |
| 124-48-1 | Dibromochloromethane | 50 | 54.6 | 109 | 54.5 | 109 | 0 | 70-130/25 |
| 106-93-4 | 1,2-Dibromoethane | 50 | 55.5 | 111 | 54.8 | 110 | 1 | 70-130/25 |
| 95-50-1 | 1,2-Dichlorobenzene | 50 | 53.6 | 107 | 53.1 | 106 | 1 | 70-130/25 |
| 541-73-1 | 1,3-Dichlorobenzene | 50 | 55.4 | 111 | 54.4 | 109 | 2 | 70-130/25 |
| 106-46-7 | 1,4-Dichlorobenzene | 50 | 52.4 | 105 | 51.7 | 103 | 1 | 70-130/25 |
| 75-71-8 | Dichlorodifluoromethane | 50 | 43.9 | 88 | 42.5 | 85 | 3 | 70-130/25 |
| 75-34-3 | 1,1-Dichloroethane | 50 | 48.8 | 98 | 47.0 | 94 | 4 | 70-130/25 |
| 107-06-2 | 1,2-Dichloroethane | 50 | 53.0 | 106 | 52.3 | 105 | 1 | 70-130/25 |
| 75-35-4 | 1,1-Dichloroethene | 50 | 50.4 | 101 | 48.5 | 97 | 4 | 70-130/25 |
| 156-59-2 | cis-1,2-Dichloroethene | 50 | 49.3 | 99 | 48.5 | 97 | 2 | 70-130/25 |
| 156-60-5 | trans-1,2-Dichloroetbene | 50 | 50.6 | 101 | 49.0 | 98 | 3 | 70-130/25 |
| 78-87-5 | 1,2-Dichloropropane | 50 | 51.0 | 102 | 49.5 | 99 | 3 | 70-130/25 |
| 142-28-9 | 1,3-Dichlnropropane | 50 | 51.2 | 102 | 51.2 | 102 | 0 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2000-BS | N53020.D | 1 | 05/25/11 | MC | n/a | n/a | MSN2000 |
| MSN2000-BSD | N53021.D | 1 | 05/25/11 | MC | n/a | n/a | MSN2000 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC227-2

| CAS No. | Compound | Spike ug/l | BSP ug/l | BSP % | BSD ug/l | BSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | 50 | 45.8 | 92 | 43.3 | 87 | 6 | 70-130/25 |
| 563-58-6 | 1,1-Dichloropropene | 50 | 55.9 | 112 | 53.0 | 106 | 5 | 70-130/25 |
| 10061-01-5 | cis-1,3-Dichloropropene | 50 | 49.4 | 99 | 48.5 | 97 | 2 | 70-130/25 |
| 10061-02-6 | trans-1,3-Dichloropropene | 50 | 51.8 | 104 | 50.7 | 101 | 2 | 70-130/25 |
| 123-91-1 | 1,4-Dioxane | 250 | 239 | 96 | 247 | 99 | 3 | 70-130/25 |
| 97-63-2 | Ethyl methacrylate | 50 | 49.3 | 99 | 48.5 | 97 | 2 | 77-137/25 |
| 100-41-4 | Ethylbenzene | 50 | 55.7 | 111 | 54.0 | 108 | 3 | 70-130/25 |
| 87-68-3 | Hexachlorobutadiene | 50 | 56.4 | 113 | 55.1 | 110 | 2 | 70-130/25 |
| 591-78-6 | 2-Hexanone | 50 | 45.3 | 91 | 41.3 | 83 | 9 | 70-130/25 |
| 98-82-8 | Isopropylbenzene | 50 | 61.4 | 123 | 60.0 | 120 | 2 | 70-130/25 |
| 99-87-6 | p-Isopropyltoluene | 50 | 55.2 | 110 | 53.7 | 107 | 3 | 70-130/25 |
| 1634-04-4 | Methyl Tert Butyl Ether | 50 | 48.6 | 97 | 48.1 | 96 | 1 | 70-130/25 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | 50 | 45.4 | 91 | 43.9 | 88 | 3 | 70-130/25 |
| 74-95-3 | Methylene bromide | 50 | 53.0 | 106 | 53.3 | 107 | 1 | 70-130/25 |
| 75-09-2 | Methylene chloride | 50 | 47.6 | 95 | 46.5 | 93 | 2 | 70-130/25 |
| 91-20-3 | Naphthalene | 50 | 57.7 | 115 | 56.2 | 112 | 3 | 70-130/25 |
| 103-65-1 | n-Propylbenzene | 50 | 53.4 | 107 | 51.8 | 104 | 3 | 70-130/25 |
| 100-42-5 | Styrene | 50 | 58.6 | 117 | 57.5 | 115 | 2 | 70-130/25 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | 50 | 61.8 | 124 | 60.4 | 121 | 2 | 70-130/25 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | 50 | 50.0 | 100 | 50.3 | 101 | 1 | 70-130/25 |
| 127-18-4 | Tetrachloroethene | 50 | 59.8 | 120 | 57.5 | 115 | 4 | 70-130/25 |
| 108-88-3 | Toluene | 50 | 55.1 | 110 | 52.9 | 106 | 4 | 70-130/25 |
| 87-61-6 | 1,2,3-Trichlorobenzene | 50 | 56.4 | 113 | 56.2 | 112 | 0 | 70-130/25 |
| 120-82-1 | 1,2,4-Trichlorobenzene | 50 | 58.5 | 117 | 58.0 | 116 | 1 | 70-130/25 |
| 71-55-6 | 1,1,1-Trichloroethane | 50 | 54.5 | 109 | 52.7 | 105 | 3 | 70-130/25 |
| 79-00-5 | 1,1,2-Trichloroethane | 50 | 54.0 | 108 | 53.2 | 106 | 1 | 70-130/25 |
| 79-01-6 | Trichloroethene | 50 | 54.8 | 110 | 52.6 | 105 | 4 | 70-130/25 |
| 75-69-4 | Trichlorofluoromethane | 50 | 48.3 | 97 | 46.2 | 92 | 4 | 70-130/25 |
| 96-18-4 | 1,2,3-Trichloropropane | 50 | 50.6 | 101 | 50.6 | 101 | 0 | 70-130/25 |
| 95-63-6 | 1,2,4-Trimethylbenzene | 50 | 52.4 | 105 | 51.3 | 103 | 2 | 70-130/25 |
| 108-67-8 | 1,3,5-Trimethylbenzene | 50 | 52.1 | 104 | 50.9 | 102 | 2 | 70-130/25 |
| 108-05-4 | Vinyl Acetate | 50 | 34.5 | 69* a | 34.4 | 69* a | 0 | 70-130/25 |
| 75-01-4 | Vinyl chloride | 50 | 48.4 | 97 | 46.4 | 93 | 4 | 70-130/25 |
| | m,p-Xylene | 100 | 115 | 115 | 110 | 110 | 4 | 70-130/25 |
| 95-47-6 | o-Xylene | 50 | 57.1 | 114 | 54.3 | 109 | 5 | 70-130/25 |
| 1330-20-7 | Xylene (total) | 150 | 172 | 115 | 164 | 109 | 5 | 70-130/25 |

# Blank Spike/Blank Spike Duplicate Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MSN2000-BS | N53020.D | 1 | 05/25/11 | MC | n/a | n/a | MSN2000 |
| MSN2000-BSD | N53021.D | 1 | 05/25/11 | MC | n/a | n/a | MSN2000 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC227-2

| CAS No. | Surrogate Recoveries | BSP | BSD | Limits |
|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 99% | 99% | 70-130% |
| 2037-26-5 | Toluene-D8 | 107% | 106% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 98% | 99% | 70-130% |

(a) Outside control limits. Blank Spike meets program technical requirements.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC198-2MS | N53032.D | 5 | 05/25/11 | MC | n/a | n/a | MSN2000 |
| MC198-2MSD | N53033.D | 5 | 05/25/11 | MC | n/a | n/a | MSN2000 |
| MC198-2 | N53031.D | 1 | 05/25/11 | MC | n/a | n/a | MSN2000 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC227-2

| CAS No. | Compound | MC198-2 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 5.5 | | 250 | 141 | 54* [a] | 142 | 55* [a] | 1 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 1250 | 3610 | 289* [b] | 3650 | 292* [b] | 1 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 250 | 1300 | 520* [b] | 1290 | 516* [b] | 1 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 250 | 272 | 109 | 277 | 111 | 2 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 250 | 273 | 109 | 285 | 114 | 4 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 250 | 270 | 108 | 272 | 109 | 1 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 250 | 298 | 119 | 303 | 121 | 2 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 250 | 255 | 102 | 269 | 108 | 5 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 250 | 255 | 102 | 274 | 110 | 7 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 250 | 176 | 70 | 176 | 70 | 0 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 250 | 255 | 102 | 272 | 109 | 6 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 250 | 256 | 102 | 272 | 109 | 6 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 250 | 255 | 102 | 271 | 108 | 6 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 250 | 266 | 106 | 273 | 109 | 3 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 250 | 247 | 99 | 264 | 106 | 7 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 250 | 260 | 104 | 274 | 110 | 5 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 250 | 265 | 106 | 266 | 106 | 0 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 250 | 140 | 56* [a] | 145 | 58* [a] | 4 | 70-130/30 |
| 67-66-3 | Chloroform | ND | | 250 | 269 | 108 | 272 | 109 | 1 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 250 | 227 | 91 | 255 | 102 | 12 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 250 | 255 | 102 | 267 | 107 | 5 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 250 | 267 | 107 | 278 | 111 | 4 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 250 | 240 | 96 | 253 | 101 | 5 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 250 | 265 | 106 | 278 | 111 | 5 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 250 | 283 | 113 | 289 | 116 | 2 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 250 | 266 | 106 | 275 | 110 | 3 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 250 | 268 | 107 | 279 | 112 | 4 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 250 | 252 | 101 | 266 | 106 | 5 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 250 | 205 | 82 | 206 | 82 | 0 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 250 | 260 | 104 | 264 | 106 | 2 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 250 | 275 | 110 | 276 | 110 | 0 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 250 | 264 | 106 | 266 | 106 | 1 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 250 | 262 | 105 | 263 | 105 | 0 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 250 | 267 | 107 | 268 | 107 | 0 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 250 | 266 | 106 | 270 | 108 | 1 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 250 | 269 | 108 | 276 | 110 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC198-2MS | N53032.D | 5 | 05/25/11 | MC | n/a | n/a | MSN2000 |
| MC198-2MSD | N53033.D | 5 | 05/25/11 | MC | n/a | n/a | MSN2000 |
| MC198-2 | N53031.D | 1 | 05/25/11 | MC | n/a | n/a | MSN2000 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC227-2

| CAS No. | Compound | MC198-2 ug/l | Q | Spike ug/l | MS ug/l | MS % | MSD ug/l | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 250 | 228 | 91 | 237 | 95 | 4 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 250 | 278 | 111 | 286 | 114 | 3 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 250 | 252 | 101 | 260 | 104 | 3 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 250 | 264 | 106 | 271 | 108 | 3 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 1250 | 1320 | 106 | 1400 | 112 | 6 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 250 | 260 | 104 | 267 | 107 | 3 | 72-139/30 |
| 100-41-4 | Ethylbenzene | ND | | 250 | 270 | 108 | 285 | 114 | 5 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 250 | 251 | 100 | 279 | 112 | 11 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 250 | 205 | 82 | 211 | 84 | 3 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 250 | 306 | 122 | 319 | 128 | 4 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 250 | 263 | 105 | 278 | 111 | 6 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 250 | 269 | 108 | 271 | 108 | 1 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 250 | 252 | 101 | 258 | 103 | 2 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 250 | 279 | 112 | 283 | 113 | 1 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 250 | 259 | 104 | 260 | 104 | 0 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 250 | 270 | 108 | 299 | 120 | 10 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 250 | 266 | 106 | 280 | 112 | 5 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 250 | 283 | 113 | 297 | 119 | 5 | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 250 | 295 | 118 | 311 | 124 | 5 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 250 | 276 | 110 | 284 | 114 | 3 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 250 | 275 | 110 | 289 | 116 | 5 | 70-130/30 |
| 108-88-3 | Toluene | 1.0 | | 250 | 279 | 111 | 286 | 114 | 2 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 250 | 255 | 102 | 284 | 114 | 11 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 250 | 262 | 105 | 287 | 115 | 9 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 250 | 289 | 116 | 296 | 118 | 2 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 250 | 285 | 114 | 289 | 116 | 1 | 70-130/30 |
| 79-01-6 | Trichloroethene | ND | | 250 | 276 | 110 | 280 | 112 | 1 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 250 | 249 | 100 | 253 | 101 | 2 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 250 | 273 | 109 | 282 | 113 | 3 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 250 | 255 | 102 | 263 | 105 | 3 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 250 | 254 | 102 | 268 | 107 | 5 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 250 | 199 | 80 | 207 | 83 | 4 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 250 | 250 | 100 | 249 | 100 | 0 | 70-130/30 |
| | m,p-Xylene | ND | | 500 | 555 | 111 | 585 | 117 | 5 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 250 | 277 | 111 | 288 | 115 | 4 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 750 | 832 | 111 | 873 | 116 | 5 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC198-2MS | N53032.D | 5 | 05/25/11 | MC | n/a | n/a | MSN2000 |
| MC198-2MSD | N53033.D | 5 | 05/25/11 | MC | n/a | n/a | MSN2000 |
| MC198-2 | N53031.D | 1 | 05/25/11 | MC | n/a | n/a | MSN2000 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC227-2

| CAS No. | Surrogate Recoveries | MS | MSD | MC198-2 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 105% | 103% | 103% | 70-130% |
| 2037-26-5 | Toluene-D8 | 109% | 108% | 107% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | 100% | 105% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC407-1MS | P53344.D | 1 | 05/26/11 | AMY | n/a | n/a | MSP1770 |
| MC407-1MSD | P53345.D | 1 | 05/26/11 | AMY | n/a | n/a | MSP1770 |
| MC407-1 | P53343.D | 1 | 05/26/11 | AMY | n/a | n/a | MSP1770 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC227-1

| CAS No. | Compound | MC407-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 67-64-1 | Acetone | 11.7 | | 43.6 | 31.8 | 46* [a] | 24.8 | 30* [a] | 25 | 70-130/30 |
| 107-02-8 | Acrolein | ND | | 218 | 462 | 212* [b] | 475 | 218* [b] | 3 | 70-130/30 |
| 107-13-1 | Acrylonitrile | ND | | 43.6 | 43.3 | 99 | 47.2 | 108 | 9 | 70-130/30 |
| 71-43-2 | Benzene | ND | | 43.6 | 43.4 | 100 | 44.9 | 103 | 3 | 70-130/30 |
| 108-86-1 | Bromobenzene | ND | | 43.6 | 40.2 | 92 | 48.6 | 111 | 19 | 70-130/30 |
| 74-97-5 | Bromochloromethane | ND | | 43.6 | 48.7 | 112 | 50.3 | 115 | 3 | 70-130/30 |
| 75-27-4 | Bromodichloromethane | ND | | 43.6 | 49.2 | 113 | 49.9 | 114 | 1 | 70-130/30 |
| 75-25-2 | Bromoform | ND | | 43.6 | 60.3 | 138* [b] | 59.3 | 136* [b] | 2 | 70-130/30 |
| 74-83-9 | Bromomethane | ND | | 43.6 | 32.1 | 74 | 38.8 | 89 | 19 | 70-130/30 |
| 78-93-3 | 2-Butanone (MEK) | ND | | 43.6 | 36.5 | 84 | 33.3 | 76 | 9 | 70-130/30 |
| 104-51-8 | n-Butylbenzene | ND | | 43.6 | 39.6 | 91 | 50.0 | 115 | 23 | 70-130/30 |
| 135-98-8 | sec-Butylbenzene | ND | | 43.6 | 44.0 | 101 | 58.3 | 134* [a] | 28 | 70-130/30 |
| 98-06-6 | tert-Butylbenzene | ND | | 43.6 | 45.4 | 104 | 61.3 | 141* [a] | 30 | 70-130/30 |
| 75-15-0 | Carbon disulfide | ND | | 43.6 | 35.6 | 82 | 36.7 | 84 | 3 | 70-130/30 |
| 56-23-5 | Carbon tetrachloride | ND | | 43.6 | 51.7 | 119 | 55.3 | 127 | 7 | 70-130/30 |
| 108-90-7 | Chlorobenzene | ND | | 43.6 | 45.1 | 103 | 44.1 | 101 | 2 | 70-130/30 |
| 75-00-3 | Chloroethane | ND | | 43.6 | 41.6 | 95 | 44.0 | 101 | 6 | 70-130/30 |
| 110-75-8 | 2-Chloroethyl vinyl ether | ND | | 43.6 | 44.1 | 101 | 45.1 | 103 | 2 | 10-160/30 |
| 67-66-3 | Chloroform | ND | | 43.6 | 43.3 | 99 | 44.8 | 103 | 3 | 70-130/30 |
| 74-87-3 | Chloromethane | ND | | 43.6 | 27.1 | 62* [a] | 33.4 | 77 | 21 | 70-130/30 |
| 95-49-8 | o-Chlorotoluene | ND | | 43.6 | 39.3 | 90 | 49.4 | 113 | 23 | 70-130/30 |
| 106-43-4 | p-Chlorotoluene | ND | | 43.6 | 39.2 | 90 | 47.2 | 108 | 19 | 70-130/30 |
| 96-12-8 | 1,2-Dibromo-3-chloropropane | ND | | 43.6 | 53.6 | 123 | 61.9 | 142* [a] | 14 | 70-130/30 |
| 124-48-1 | Dibromochloromethane | ND | | 43.6 | 54.8 | 126 | 57.1 | 131* [a] | 4 | 70-130/30 |
| 106-93-4 | 1,2-Dibromoethane | ND | | 43.6 | 52.4 | 120 | 51.4 | 118 | 2 | 70-130/30 |
| 95-50-1 | 1,2-Dichlorobenzene | ND | | 43.6 | 35.7 | 82 | 41.5 | 95 | 15 | 70-130/30 |
| 541-73-1 | 1,3-Dichlorobenzene | ND | | 43.6 | 36.6 | 84 | 42.5 | 97 | 15 | 70-130/30 |
| 106-46-7 | 1,4-Dichlorobenzene | ND | | 43.6 | 35.5 | 81 | 40.5 | 93 | 13 | 70-130/30 |
| 75-71-8 | Dichlorodifluoromethane | ND | | 43.6 | 34.8 | 80 | 37.6 | 86 | 8 | 70-130/30 |
| 75-34-3 | 1,1-Dichloroethane | ND | | 43.6 | 38.7 | 89 | 40.7 | 93 | 5 | 70-130/30 |
| 107-06-2 | 1,2-Dichloroethane | ND | | 43.6 | 46.8 | 107 | 49.4 | 113 | 5 | 70-130/30 |
| 75-35-4 | 1,1-Dichloroethene | ND | | 43.6 | 42.1 | 97 | 44.3 | 102 | 5 | 70-130/30 |
| 156-59-2 | cis-1,2-Dichloroethene | ND | | 43.6 | 40.1 | 92 | 41.5 | 95 | 3 | 70-130/30 |
| 156-60-5 | trans-1,2-Dichloroethene | ND | | 43.6 | 38.2 | 88 | 39.5 | 91 | 3 | 70-130/30 |
| 78-87-5 | 1,2-Dichloropropane | ND | | 43.6 | 40.2 | 92 | 42.5 | 97 | 6 | 70-130/30 |
| 142-28-9 | 1,3-Dichloropropane | ND | | 43.6 | 50.3 | 115 | 51.9 | 119 | 3 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC407-1MS | P53344.D | 1 | 05/26/11 | AMY | n/a | n/a | MSP1770 |
| MC407-1MSD | P53345.D | 1 | 05/26/11 | AMY | n/a | n/a | MSP1770 |
| MC407-1 | P53343.D | 1 | 05/26/11 | AMY | n/a | n/a | MSP1770 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC227-1

| CAS No. | Compound | MC407-1 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 594-20-7 | 2,2-Dichloropropane | ND | | 43.6 | 58.8 | 135* [b] | 60.8 | 139* [b] | 3 | 70-130/30 |
| 563-58-6 | 1,1-Dichloropropene | ND | | 43.6 | 42.8 | 98 | 45.7 | 105 | 7 | 70-130/30 |
| 10061-01-5 | cis-1,3-Dichloropropene | ND | | 43.6 | 43.8 | 100 | 43.6 | 100 | 0 | 70-130/30 |
| 10061-02-6 | trans-1,3-Dichloropropene | ND | | 43.6 | 46.8 | 107 | 45.2 | 104 | 3 | 70-130/30 |
| 123-91-1 | 1,4-Dioxane | ND | | 218 | 333 | 153* [a] | 408 | 187* [a] | 20 | 70-130/30 |
| 97-63-2 | Ethyl methacrylate | ND | | 43.6 | 50.3 | 115 | 50.2 | 115 | 0 | 41-160/30 |
| 100-41-4 | Ethylbenzene | ND | | 43.6 | 47.2 | 108 | 48.7 | 112 | 3 | 70-130/30 |
| 87-68-3 | Hexachlorobutadiene | ND | | 43.6 | 37.7 | 86 | 49.0 | 112 | 26 | 70-130/30 |
| 591-78-6 | 2-Hexanone | ND | | 43.6 | 40.7 | 93 | 42.0 | 96 | 3 | 70-130/30 |
| 98-82-8 | Isopropylbenzene | ND | | 43.6 | 51.6 | 118 | 68.7 | 158* [a] | 28 | 70-130/30 |
| 99-87-6 | p-Isopropyltoluene | ND | | 43.6 | 43.1 | 99 | 58.1 | 133* [a] | 30 | 70-130/30 |
| 1634-04-4 | Methyl Tert Butyl Ether | ND | | 43.6 | 56.2 | 129 | 61.2 | 140* [a] | 9 | 70-130/30 |
| 108-10-1 | 4-Methyl-2-pentanone (MIBK) | ND | | 43.6 | 52.7 | 121 | 56.0 | 128 | 6 | 70-130/30 |
| 74-95-3 | Methylene bromide | ND | | 43.6 | 49.7 | 114 | 51.0 | 117 | 3 | 70-130/30 |
| 75-09-2 | Methylene chloride | ND | | 43.6 | 35.3 | 81 | 37.4 | 86 | 6 | 70-130/30 |
| 91-20-3 | Naphthalene | ND | | 43.6 | 21.6 | 50* [a] | 20.1 | 46* [a] | 7 | 70-130/30 |
| 103-65-1 | n-Propylbenzene | ND | | 43.6 | 41.8 | 96 | 53.7 | 123 | 25 | 70-130/30 |
| 100-42-5 | Styrene | ND | | 43.6 | 28.2 | 65* [a] | 43.8 | 100 | 43* [c] | 70-130/30 |
| 630-20-6 | 1,1,1,2-Tetrachloroethane | ND | | 43.6 | 52.7 | 121 | 55.1 | 126 | 4 | 70-130/30 |
| 79-34-5 | 1,1,2,2-Tetrachloroethane | ND | | 43.6 | 47.6 | 109 | 60.7 | 139* [a] | 24 | 70-130/30 |
| 127-18-4 | Tetrachloroethene | ND | | 43.6 | 53.6 | 123 | 55.8 | 128 | 4 | 70-130/30 |
| 108-88-3 | Toluene | ND | | 43.6 | 48.8 | 112 | 48.3 | 111 | 1 | 70-130/30 |
| 87-61-6 | 1,2,3-Trichlorobenzene | ND | | 43.6 | 28.7 | 66* [a] | 32.8 | 75 | 13 | 70-130/30 |
| 120-82-1 | 1,2,4-Trichlorobenzene | ND | | 43.6 | 29.9 | 69* [a] | 33.8 | 78 | 12 | 70-130/30 |
| 71-55-6 | 1,1,1-Trichloroethane | ND | | 43.6 | 46.4 | 106 | 48.6 | 111 | 5 | 70-130/30 |
| 79-00-5 | 1,1,2-Trichloroethane | ND | | 43.6 | 49.5 | 114 | 50.5 | 116 | 2 | 70-130/30 |
| 79-01-6 | Trichloroethene | 9.2 | | 43.6 | 56.1 | 108 | 57.8 | 111 | 3 | 70-130/30 |
| 75-69-4 | Trichlorofluoromethane | ND | | 43.6 | 45.7 | 105 | 48.7 | 112 | 6 | 70-130/30 |
| 96-18-4 | 1,2,3-Trichloropropane | ND | | 43.6 | 50.3 | 115 | 62.8 | 144* [a] | 22 | 70-130/30 |
| 95-63-6 | 1,2,4-Trimethylbenzene | ND | | 43.6 | 42.9 | 98 | 57.0 | 131* [a] | 28 | 70-130/30 |
| 108-67-8 | 1,3,5-Trimethylbenzene | ND | | 43.6 | 43.7 | 100 | 57.4 | 132* [a] | 27 | 70-130/30 |
| 108-05-4 | Vinyl Acetate | ND | | 43.6 | 32.4 | 74 | 32.4 | 74 | 0 | 70-130/30 |
| 75-01-4 | Vinyl chloride | ND | | 43.6 | 41.4 | 95 | 45.0 | 103 | 8 | 70-130/30 |
| | m,p-Xylene | ND | | 87.2 | 101 | 116 | 102 | 117 | 1 | 70-130/30 |
| 95-47-6 | o-Xylene | ND | | 43.6 | 51.3 | 118 | 52.7 | 121 | 3 | 70-130/30 |
| 1330-20-7 | Xylene (total) | ND | | 131 | 152 | 116 | 154 | 118 | 1 | 70-130/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| MC407-1MS | P53344.D | 1 | 05/26/11 | AMY | n/a | n/a | MSP1770 |
| MC407-1MSD | P53345.D | 1 | 05/26/11 | AMY | n/a | n/a | MSP1770 |
| MC407-1 | P53343.D | 1 | 05/26/11 | AMY | n/a | n/a | MSP1770 |



The QC reported here applies to the following samples: Method: SW846 8260B

MC227-1

| CAS No. | Surrogate Recoveries | MS | MSD | MC407-1 | Limits |
|---|---|---|---|---|---|
| 1868-53-7 | Dibromofluoromethane | 118% | 119% | 125% | 70-130% |
| 2037-26-5 | Toluene-D8 | 120% | 119% | 127% | 70-130% |
| 460-00-4 | 4-Bromofluorobenzene | 101% | 112% | 106% | 70-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.
(b) Outside control limits. Associated samples are non-detect for this compound.
(c) High RPD due to possible matrix interference and/or sample non-homogeneity.

# Volatile Internal Standard Area Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSN2000-CC1974 | Injection Date: | 05/25/11 |
| Lab File ID: | N53019.D | Injection Time: | 16:20 |
| Instrument ID: | GCMSN | Method: | SW846 8260B |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 180078 | 8.60 | 286006 | 9.46 | 154298 | 12.70 | 127847 | 15.26 | 60424 | 6.18 |
| Upper Limit [a] | 360156 | 9.10 | 572012 | 9.96 | 308596 | 13.20 | 255694 | 15.76 | 120848 | 6.68 |
| Lower Limit [b] | 90039 | 8.10 | 143003 | 8.96 | 77149 | 12.20 | 63924 | 14.76 | 30212 | 5.68 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSN2000-BS | 177653 | 8.60 | 283470 | 9.46 | 154204 | 12.70 | 127883 | 15.26 | 62366 | 6.19 |
| MSN1998-BS1 | 177653 | 8.60 | 283470 | 9.46 | 154204 | 12.70 | 127883 | 15.26 | 62366 | 6.19 |
| MSN2000-BSD | 177356 | 8.60 | 282905 | 9.46 | 152872 | 12.70 | 125761 | 15.26 | 59417 | 6.19 |
| MSN1998-BSD1 | 177356 | 8.60 | 282905 | 9.46 | 152872 | 12.70 | 125761 | 15.26 | 59417 | 6.19 |
| MSN2000-MB | 176149 | 8.60 | 285195 | 9.46 | 146737 | 12.70 | 116911 | 15.26 | 58010 | 6.18 |
| MSN1998-MB1 | 176149 | 8.60 | 285195 | 9.46 | 146737 | 12.70 | 116911 | 15.26 | 58010 | 6.18 |
| MC227-2 | 170132 | 8.60 | 278893 | 9.46 | 144531 | 12.70 | 114084 | 15.26 | 59736 | 6.19 |
| ZZZZZZ | 170224 | 8.60 | 278971 | 9.46 | 146197 | 12.70 | 113531 | 15.27 | 64176 | 6.19 |
| MC230-2 | 169206 | 8.60 | 280950 | 9.46 | 146170 | 12.71 | 110466 | 15.27 | 54888 | 6.19 |
| ZZZZZZ | 166452 | 8.60 | 279206 | 9.46 | 146808 | 12.70 | 112598 | 15.26 | 60814 | 6.19 |
| ZZZZZZ | 167628 | 8.60 | 279867 | 9.46 | 148685 | 12.70 | 121374 | 15.26 | 68576 | 6.18 |
| ZZZZZZ | 166377 | 8.60 | 276136 | 9.46 | 146374 | 12.70 | 116424 | 15.26 | 64934 | 6.19 |
| ZZZZZZ | 167571 | 8.60 | 277834 | 9.46 | 145882 | 12.70 | 113809 | 15.26 | 66893 | 6.18 |
| MC198-2 | 166064 | 8.60 | 274612 | 9.46 | 145425 | 12.70 | 110479 | 15.27 | 62420 | 6.19 |
| MC198-2MS | 168010 | 8.60 | 278194 | 9.46 | 155008 | 12.70 | 123886 | 15.26 | 67914 | 6.19 |
| MC198-2MSD | 168983 | 8.60 | 278085 | 9.46 | 153299 | 12.70 | 124646 | 15.26 | 71027 | 6.19 |
| ZZZZZZ | 165480 | 8.60 | 276349 | 9.46 | 144619 | 12.70 | 112585 | 15.26 | 71501 | 6.19 |
| ZZZZZZ | 164779 | 8.60 | 273724 | 9.46 | 143547 | 12.70 | 109392 | 15.27 | 67316 | 6.19 |
| ZZZZZZ | 163135 | 8.60 | 273783 | 9.46 | 143770 | 12.71 | 110636 | 15.27 | 65466 | 6.19 |
| ZZZZZZ | 162417 | 8.60 | 271815 | 9.46 | 141616 | 12.70 | 108704 | 15.27 | 63497 | 6.19 |
| ZZZZZZ | 162787 | 8.60 | 272101 | 9.46 | 143749 | 12.70 | 107364 | 15.27 | 59174 | 6.19 |
| ZZZZZZ | 161311 | 8.60 | 272685 | 9.46 | 143428 | 12.70 | 106813 | 15.26 | 57478 | 6.19 |
| ZZZZZZ | 159512 | 8.60 | 267525 | 9.46 | 141400 | 12.70 | 107321 | 15.26 | 56354 | 6.19 |
| ZZZZZZ | 160028 | 8.60 | 267358 | 9.46 | 141211 | 12.71 | 106233 | 15.26 | 63901 | 6.19 |
| ZZZZZZ | 157571 | 8.60 | 266542 | 9.46 | 142388 | 12.70 | 108882 | 15.26 | 66795 | 6.19 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcobol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

# Volatile Internal Standard Area Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSP1770-CC1750 | Injection Date: | 05/26/11 |
| Lab File ID: | P53338.D | Injection Time: | 18:17 |
| Instrument ID: | GCMSP | Method: | SW846 8260B |



| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 55540 | 8.50 | 78559 | 9.35 | 39259 | 12.57 | 39575 | 15.13 | 15508 | 6.19 |
| Upper Limit [a] | 111080 | 9.00 | 157118 | 9.85 | 78518 | 13.07 | 79150 | 15.63 | 31016 | 6.69 |
| Lower Limit [b] | 27770 | 8.00 | 39280 | 8.85 | 19630 | 12.07 | 19788 | 14.63 | 7754 | 5.69 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT |
| MSP1770-BS | 55540 | 8.50 | 78559 | 9.35 | 39259 | 12.57 | 39575 | 15.13 | 15508 | 6.19 |
| MSP1770-MB | 41847 | 8.51 | 56448 | 9.36 | 26543 | 12.58 | 23533 | 15.14 | 12910 | 6.21 |
| ZZZZZZ | 39811 | 8.51 | 55676 | 9.36 | 26144 | 12.58 | 23253 | 15.14 | 18195 | 6.21 |
| MC227-1 | 40158 | 8.51 | 57184 | 9.36 | 28458 | 12.58 | 24283 | 15.14 | 9546 | 6.20 |
| MC407-1 | 39190 | 8.51 | 53719 | 9.36 | 24911 | 12.58 | 20065 | 15.14 | 18897 | 6.21 |
| MC407-1MS | 50546 | 8.50 | 73696 | 9.35 | 35909 | 12.58 | 37104 | 15.13 | 23180 | 6.19 |
| MC407-1MSD | 53828 | 8.50 | 76555 | 9.35 | 36177 | 12.57 | 29135 | 15.13 | 25388 | 6.19 |
| ZZZZZZ | 40585 | 8.51 | 56064 | 9.36 | 25351 | 12.58 | 21172 | 15.14 | 16846 | 6.21 |
| ZZZZZZ | 40640 | 8.51 | 55661 | 9.36 | 23831 | 12.58 | 15281[c] | 15.14 | 18863 | 6.20 |
| ZZZZZZ | 39341 | 8.51 | 55577 | 9.36 | 26289 | 12.58 | 23401 | 15.14 | 18712 | 6.21 |
| ZZZZZZ | 37591 | 8.51 | 51837 | 9.36 | 19094[c] | 12.58 | 10478[c] | 15.14 | 18487 | 6.21 |
| ZZZZZZ | 38300 | 8.51 | 52826 | 9.36 | 21533 | 12.58 | 12681[c] | 15.14 | 22858 | 6.21 |
| ZZZZZZ | 40456 | 8.51 | 56553 | 9.36 | 23491 | 12.58 | 13857[c] | 15.14 | 19531 | 6.21 |
| ZZZZZZ | 38060 | 8.51 | 54389 | 9.36 | 21748 | 12.58 | 12777[c] | 15.14 | 20073 | 6.20 |
| ZZZZZZ | 42690 | 8.51 | 57199 | 9.37 | 22605 | 12.58 | 14324[c] | 15.14 | 14598 | 6.26 |
| ZZZZZZ | 44954 | 8.51 | 63903 | 9.36 | 28646 | 12.58 | 23321 | 15.14 | 21267 | 6.21 |
| ZZZZZZ | 42523 | 8.51 | 60066 | 9.36 | 27643 | 12.58 | 23215 | 15.14 | 18266 | 6.22 |
| ZZZZZZ | 41646 | 8.51 | 60790 | 9.36 | 27688 | 12.58 | 24044 | 15.14 | 19121 | 6.21 |
| ZZZZZZ | 168[c] | 8.53 | 398[c] | 9.37 | 0[c] | 3.29* | 0[c] | 0.00* | 0[c] | 0.00* |
| ZZZZZZ | 30417 | 8.51 | 36051[c] | 9.36 | 11654[c] | 12.58 | 6409[c] | 15.14 | 13249 | 6.24 |
| ZZZZZZ | 16614[c] | 8.51 | 17788[c] | 9.36 | 5801[c] | 12.58 | 3852[c] | 15.14 | 13318 | 6.24 |
| ZZZZZZ | 28548 | 8.51 | 36048[c] | 9.36 | 14101[c] | 12.58 | 9360[c] | 15.14 | 17106 | 6.21 |
| ZZZZZZ | 41039 | 8.51 | 54674 | 9.36 | 21919 | 12.58 | 12889[c] | 15.14 | 16592 | 6.22 |

IS 1 = Pentafluorobenzene
IS 2 = 1,4-Difluorobenzene
IS 3 = Chlorobenzene-D5
IS 4 = 1,4-Dichlorobenzene-d4
IS 5 = Tert Butyl Alcohol-D9

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.
(c) Outside control limits due to possible matrix interference. Confirmed by reanalysis.

# Volatile Surrogate Recovery Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: AQ

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC227-2 | N53024.D | 100.0 | 107.0 | 101.0 |
| MC198-2MS | N53032.D | 105.0 | 109.0 | 101.0 |
| MC198-2MSD | N53033.D | 103.0 | 108.0 | 100.0 |
| MSN2000-BS | N53020.D | 99.0 | 107.0 | 98.0 |
| MSN2000-BSD | N53021.D | 99.0 | 106.0 | 99.0 |
| MSN2000-MB | N53023.D | 99.0 | 106.0 | 100.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

# Volatile Surrogate Recovery Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

Method: SW846 8260B Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 |
|---|---|---|---|---|
| MC227-1 | P53342.D | 126.0 | 120.0 | 104.0 |
| MC407-1MS | P53344.D | 118.0 | 120.0 | 101.0 |
| MC407-1MSD | P53345.D | 119.0 | 119.0 | 112.0 |
| MSP1770-BS | P53338.D | 110.0 | 118.0 | 98.0 |
| MSP1770-MB | P53340.D | 115.0 | 125.0 | 99.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = Dibromofluoromethane | 70-130% |
| S2 = Toluene-D8 | 70-130% |
| S3 = 4-Bromofluorobenzene | 70-130% |

5.6.2

5

New England ACCUTEST LABORATORIES

## GC/MS Semi-volatiles



# QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries
- Internal Standard Area Summaries
- Surrogate Recovery Summaries

# Method Blank Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24969-MB | I72783.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |

The QC reported here applies to the following samples: Method: SW846 8270C

MC227-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | ND | 500 | 39 | ug/kg | |
| 95-57-8 | 2-Chlorophenol | ND | 250 | 13 | ug/kg | |
| 59-50-7 | 4-Chloro-3-methyl phenol | ND | 500 | 17 | ug/kg | |
| 120-83-2 | 2,4-Dichlorophenol | ND | 500 | 29 | ug/kg | |
| 105-67-9 | 2,4-Dimethylphenol | ND | 500 | 50 | ug/kg | |
| 51-28-5 | 2,4-Dinitrophenol | ND | 1000 | 250 | ug/kg | |
| 534-52-1 | 4,6-Dinitro-o-cresol | ND | 500 | 250 | ug/kg | |
| 95-48-7 | 2-Methylphenol | ND | 500 | 14 | ug/kg | |
| | 3&4-Methylphenol | ND | 500 | 26 | ug/kg | |
| 88-75-5 | 2-Nitrophenol | ND | 500 | 30 | ug/kg | |
| 100-02-7 | 4-Nitrophenol | ND | 1000 | 250 | ug/kg | |
| 87-86-5 | Pentachlorophenol | ND | 500 | 46 | ug/kg | |
| 108-95-2 | Phenol | ND | 250 | 42 | ug/kg | |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | 500 | 37 | ug/kg | |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | 500 | 34 | ug/kg | |
| 83-32-9 | Acenaphthene | ND | 250 | 21 | ug/kg | |
| 208-96-8 | Acenaphthylene | ND | 250 | 19 | ug/kg | |
| 62-53-3 | Aniline | ND | 500 | 500 | ug/kg | |
| 120-12-7 | Anthracene | ND | 250 | 20 | ug/kg | |
| 56-55-3 | Benzo(a)anthracene | ND | 250 | 9.2 | ug/kg | |
| 50-32-8 | Benzo(a)pyrene | ND | 250 | 15 | ug/kg | |
| 205-99-2 | Benzo(b)fluoranthene | ND | 250 | 29 | ug/kg | |
| 191-24-2 | Benzo(g,h,i)perylene | ND | 250 | 16 | ug/kg | |
| 207-08-9 | Benzo(k)fluoranthene | ND | 250 | 7.4 | ug/kg | |
| 101-55-3 | 4-Bromophenyl phenyl ether | ND | 250 | 20 | ug/kg | |
| 85-68-7 | Butyl benzyl phthalate | ND | 250 | 11 | ug/kg | |
| 100-51-6 | Benzyl Alcohol | ND | 500 | 30 | ug/kg | |
| 91-58-7 | 2-Chloronaphthalene | ND | 250 | 21 | ug/kg | |
| 106-47-8 | 4-Chloroaniline | ND | 500 | 130 | ug/kg | |
| 218-01-9 | Chrysene | ND | 250 | 8.2 | ug/kg | |
| 111-91-1 | bis(2-Chloroethoxy)methane | ND | 250 | 20 | ug/kg | |
| 111-44-4 | bis(2-Chloroethyl)ether | ND | 250 | 5.4 | ug/kg | |
| 108-60-1 | bis(2-Chloroisopropyl)ether | ND | 250 | 24 | ug/kg | |
| 7005-72-3 | 4-Chlorophenyl phenyl ether | ND | 250 | 22 | ug/kg | |
| 122-66-7 | 1,2-Diphenylhydrazine | ND | 250 | 21 | ug/kg | |
| 121-14-2 | 2,4-Dinitrotoluene | ND | 500 | 130 | ug/kg | |

# Method Blank Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24969-MB | I72783.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |

The QC reported here applies to the following samples: Method: SW846 8270C

MC227-1

| CAS No. | Compound | Result | RL | MDL | Units | Q |
|---|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | ND | 500 | 24 | ug/kg | |
| 91-94-1 | 3,3'-Dichlorobenzidine | ND | 250 | 6.0 | ug/kg | |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | 250 | 16 | ug/kg | |
| 132-64-9 | Dibenzofuran | ND | 250 | 21 | ug/kg | |
| 84-74-2 | Di-n-butyl phthalate | ND | 250 | 23 | ug/kg | |
| 117-84-0 | Di-n-octyl phthalate | ND | 250 | 13 | ug/kg | |
| 84-66-2 | Diethyl phthalate | ND | 250 | 22 | ug/kg | |
| 131-11-3 | Dimethyl phthalate | ND | 250 | 18 | ug/kg | |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | ND | 250 | 17 | ug/kg | |
| 206-44-0 | Fluoranthene | ND | 250 | 8.5 | ug/kg | |
| 86-73-7 | Fluorene | ND | 250 | 5.5 | ug/kg | |
| 118-74-1 | Hexachlorobenzene | ND | 250 | 22 | ug/kg | |
| 77-47-4 | Hexachlorocyclopentadiene | ND | 500 | 3.4 | ug/kg | |
| 67-72-1 | Hexachloroethane | ND | 250 | 20 | ug/kg | |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | 250 | 15 | ug/kg | |
| 78-59-1 | Isophorone | ND | 250 | 25 | ug/kg | |
| 90-12-0 | 1-Methylnaphthalene | ND | 250 | 250 | ug/kg | |
| 91-57-6 | 2-Methylnaphthalene | ND | 250 | 21 | ug/kg | |
| 88-74-4 | 2-Nitroaniline | ND | 500 | 130 | ug/kg | |
| 99-09-2 | 3-Nitroaniliue | ND | 500 | 130 | ug/kg | |
| 100-01-6 | 4-Nitroaniline | ND | 500 | 19 | ug/kg | |
| 91-20-3 | Naphthalene | ND | 250 | 5.8 | ug/kg | |
| 98-95-3 | Nitrobenzene | ND | 250 | 7.4 | ug/kg | |
| 62-75-9 | n-Nitrosodimethylamine | ND | 250 | 21 | ug/kg | |
| 621-64-7 | N-Nitroso-di-n-propylamine | ND | 250 | 16 | ug/kg | |
| 86-30-6 | N-Nitrosodiphenylamine | ND | 250 | 13 | ug/kg | |
| 85-01-8 | Phenanthrene | ND | 250 | 6.5 | ug/kg | |
| 129-00-0 | Pyrene | ND | 250 | 8.1 | ug/kg | |
| 110-86-1 | Pyridine | ND | 500 | 500 | ug/kg | |

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 67% | 30-130% |
| 4165-62-2 | Phenol-d5 | 64% | 30-130% |
| 118-79-6 | 2,4,6-Tribromophenol | 68% | 30-130% |

# Method Blank Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24969-MB | I72783.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |

The QC reported here applies to the following samples: Method: SW846 8270C

MC227-1

| CAS No. | Surrogate Recoveries | | Limits |
|---|---|---|---|
| 4165-60-0 | Nitrobenzene-d5 | 59% | 30-130% |
| 321-60-8 | 2-Fluorobiphenyl | 65% | 30-130% |
| 1718-51-0 | Terphenyl-d14 | 84% | 30-130% |

6.1.1

9

# Blank Spike Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24969-BS | I72784.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |

The QC reported here applies to the following samples: Method: SW846 8270C

MC227-1

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | 4780 | 3430 | 72 | 30-130 |
| 95-57-8 | 2-Chlorophenol | 4780 | 3170 | 66 | 30-130 |
| 59-50-7 | 4-Chloro-3-methyl phenol | 4780 | 3720 | 78 | 30-130 |
| 120-83-2 | 2,4-Dichlorophenol | 4780 | 3180 | 67 | 30-130 |
| 105-67-9 | 2,4-Dimethylphenol | 4780 | 3260 | 68 | 30-130 |
| 51-28-5 | 2,4-Dinitrophenol | 4780 | 2220 | 46 | 30-130 |
| 534-52-1 | 4,6-Dinitro-o-cresol | 4780 | 3470 | 73 | 30-130 |
| 95-48-7 | 2-Methylphenol | 4780 | 3330 | 70 | 30-130 |
| | 3&4-Methylphenol | 9560 | 8720 | 91 | 30-130 |
| 88-75-5 | 2-Nitrophenol | 4780 | 3180 | 67 | 30-130 |
| 100-02-7 | 4-Nitrophenol | 4780 | 3740 | 78 | 30-130 |
| 87-86-5 | Pentachlorophenol | 4780 | 3930 | 82 | 30-130 |
| 108-95-2 | Phenol | 4780 | 3090 | 65 | 30-130 |
| 95-95-4 | 2,4,5-Trichlorophenol | 4780 | 3460 | 72 | 30-130 |
| 88-06-2 | 2,4,6-Trichlorophenol | 4780 | 3440 | 72 | 30-130 |
| 83-32-9 | Acenaphthene | 2390 | 1590 | 67 | 40-140 |
| 208-96-8 | Acenaphthylene | 2390 | 1390 | 58 | 40-140 |
| 62-53-3 | Aniline | 2390 | 1960 | 82 | 40-140 |
| 120-12-7 | Anthracene | 2390 | 1680 | 70 | 40-140 |
| 56-55-3 | Benzo(a)anthracene | 2390 | 1950 | 82 | 40-140 |
| 50-32-8 | Benzo(a)pyrene | 2390 | 1620 | 68 | 40-140 |
| 205-99-2 | Benzo(b)fluoranthene | 2390 | 1650 | 69 | 40-140 |
| 191-24-2 | Benzo(g,h,i)perylene | 2390 | 1610 | 67 | 40-140 |
| 207-08-9 | Benzo(k)fluoranthene | 2390 | 1710 | 72 | 40-140 |
| 101-55-3 | 4-Bromophenyl phenyl ether | 2390 | 1830 | 77 | 40-140 |
| 85-68-7 | Butyl benzyl phthalate | 2390 | 1980 | 83 | 40-140 |
| 100-51-6 | Benzyl Alcohol | 2390 | 1630 | 68 | 40-140 |
| 91-58-7 | 2-Chloronaphthalene | 2390 | 1570 | 66 | 40-140 |
| 106-47-8 | 4-Chloroaniline | 2390 | 1420 | 59 | 40-140 |
| 218-01-9 | Chrysene | 2390 | 1800 | 75 | 40-140 |
| 111-91-1 | bis(2-Chloroethoxy)methane | 2390 | 1490 | 62 | 40-140 |
| 111-44-4 | bis(2-Chloroethyl)ether | 2390 | 1890 | 79 | 40-140 |
| 108-60-1 | bis(2-Chloroisopropyl)ether | 2390 | 1510 | 63 | 40-140 |
| 7005-72-3 | 4-Chlorophenyl phenyl ether | 2390 | 1740 | 73 | 40-140 |
| 122-66-7 | 1,2-Diphenylhydrazine | 2390 | 1520 | 64 | 40-140 |
| 121-14-2 | 2,4-Dinitrotoluene | 2390 | 1810 | 76 | 40-140 |

# Blank Spike Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24969-BS | I72784.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |

The QC reported here applies to the following samples: Method: SW846 8270C

MC227-1

| CAS No. | Compound | Spike ug/kg | BSP ug/kg | BSP % | Limits |
|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | 2390 | 1680 | 70 | 40-140 |
| 91-94-1 | 3,3'-Dichlorobenzidine | 2390 | 1700 | 71 | 40-140 |
| 53-70-3 | Dibenzo(a,h)anthracene | 2390 | 1800 | 75 | 40-140 |
| 132-64-9 | Dibenzofuran | 2390 | 1570 | 66 | 40-140 |
| 84-74-2 | Di-n-butyl phthalate | 2390 | 1870 | 78 | 40-140 |
| 117-84-0 | Di-n-octyl phthalate | 2390 | 1940 | 81 | 40-140 |
| 84-66-2 | Diethyl phthalate | 2390 | 1870 | 78 | 40-140 |
| 131-11-3 | Dimethyl phthalate | 2390 | 1740 | 73 | 40-140 |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 2390 | 2040 | 85 | 40-140 |
| 206-44-0 | Fluoranthene | 2390 | 1770 | 74 | 40-140 |
| 86-73-7 | Fluorene | 2390 | 1720 | 72 | 40-140 |
| 118-74-1 | Hexachlorobenzene | 2390 | 1730 | 72 | 40-140 |
| 77-47-4 | Hexachlorocyclopentadiene | 2390 | 952 | 40 | 40-140 |
| 67-72-1 | Hexachloroethane | 2390 | 1430 | 60 | 40-140 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | 2390 | 1780 | 74 | 40-140 |
| 78-59-1 | Isophorone | 2390 | 1440 | 60 | 40-140 |
| 90-12-0 | 1-Methylnaphthalene | 2390 | 2970 | 124 | 40-140 |
| 91-57-6 | 2-Methylnaphthalene | 2390 | 1510 | 63 | 40-140 |
| 88-74-4 | 2-Nitroaniline | 2390 | 1850 | 77 | 40-140 |
| 99-09-2 | 3-Nitroaniline | 2390 | 1670 | 70 | 40-140 |
| 100-01-6 | 4-Nitroaniline | 2390 | 1730 | 72 | 40-140 |
| 91-20-3 | Naphthalene | 2390 | 1490 | 62 | 40-140 |
| 98-95-3 | Nitrobenzene | 2390 | 1370 | 57 | 40-140 |
| 62-75-9 | n-Nitrosodimethylamine | 2390 | 1320 | 55 | 40-140 |
| 621-64-7 | N-Nitroso-di-n-propylamine | 2390 | 1640 | 69 | 40-140 |
| 86-30-6 | N-Nitrosodiphenylamine | 2390 | 1750 | 73 | 40-140 |
| 85-01-8 | Phenanthrene | 2390 | 1690 | 71 | 40-140 |
| 129-00-0 | Pyrene | 2390 | 1900 | 79 | 40-140 |
| 110-86-1 | Pyridine | 2390 | 1120 | 47 | 40-140 |

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 67% | 30-130% |
| 4165-62-2 | Phenol-d5 | 66% | 30-130% |
| 118-79-6 | 2,4,6-Tribromophenol | 74% | 30-130% |

# Blank Spike Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Datc | Prep Batcb | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24969-BS | I72784.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |

The QC reported here applies to the following samples: Method: SW846 8270C

MC227-1

| CAS No. | Surrogate Recoveries | BSP | Limits |
|---|---|---|---|
| 4165-60-0 | Nitrobenzene-d5 | 60% | 30-130% |
| 321-60-8 | 2-Fluorobiphenyl | 65% | 30-130% |
| 1718-51-0 | Terphenyl-d14 | 84% | 30-130% |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24969-MS | I72785.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |
| OP24969-MSD | I72786.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |
| MC125-5 | I72791.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |

The QC reported here applies to the following samples: Method: SW846 8270C

MC227-1

6.3.1

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| CAS No. | Compound | MC125-5 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 65-85-0 | Benzoic acid | ND | | 5580 | 3670 | 66 | 3500 | 62 | 5 | 30-130/30 |
| 95-57-8 | 2-Chlorophenol | ND | | 5580 | 3350 | 60 | 3470 | 61 | 4 | 30-130/30 |
| 59-50-7 | 4-Chloro-3-methyl phenol | ND | | 5580 | 4100 | 74 | 4360 | 77 | 6 | 30-130/30 |
| 120-83-2 | 2,4-Dichlorophenol | ND | | 5580 | 3460 | 62 | 3640 | 64 | 5 | 30-130/30 |
| 105-67-9 | 2,4-Dimethylphenol | ND | | 5580 | 3490 | 63 | 3560 | 63 | 2 | 30-130/30 |
| 51-28-5 | 2,4-Dinitrophenol | ND | | 5580 | 2090 | 37 | 2140 | 38 | 2 | 30-130/30 |
| 534-52-1 | 4,6-Dinitro-o-cresol | ND | | 5580 | 3500 | 63 | 3760 | 67 | 7 | 30-130/30 |
| 95-48-7 | 2-Methylphenol | ND | | 5580 | 3690 | 66 | 3780 | 67 | 2 | 30-130/30 |
| | 3&4-Methylphenol | ND | | 11200 | 9690 | 87 | 10100 | 89 | 4 | 30-130/30 |
| 88-75-5 | 2-Nitrophenol | ND | | 5580 | 3420 | 61 | 3570 | 63 | 4 | 30-130/30 |
| 100-02-7 | 4-Nitrophenol | ND | | 5580 | 4410 | 79 | 4600 | 81 | 4 | 30-130/30 |
| 87-86-5 | Pentachlorophenol | ND | | 5580 | 4300 | 77 | 4450 | 79 | 3 | 30-130/30 |
| 108-95-2 | Phenol | ND | | 5580 | 3460 | 62 | 3550 | 63 | 3 | 30-130/30 |
| 95-95-4 | 2,4,5-Trichlorophenol | ND | | 5580 | 3840 | 69 | 4240 | 75 | 10 | 30-130/30 |
| 88-06-2 | 2,4,6-Trichlorophenol | ND | | 5580 | 3860 | 69 | 4140 | 73 | 7 | 30-130/30 |
| 83-32-9 | Acenaphthene | ND | | 2790 | 1790 | 64 | 1910 | 68 | 6 | 40-140/30 |
| 208-96-8 | Acenaphthylene | ND | | 2790 | 1540 | 55 | 1630 | 58 | 6 | 40-140/30 |
| 62-53-3 | Aniline | ND | | 2790 | 1970 | 71 | 2030 | 72 | 3 | 40-140/30 |
| 120-12-7 | Anthracene | ND | | 2790 | 1910 | 69 | 2040 | 72 | 7 | 40-140/30 |
| 56-55-3 | Benzo(a)anthracene | ND | | 2790 | 2250 | 81 | 2390 | 85 | 6 | 40-140/30 |
| 50-32-8 | Benzo(a)pyrene | ND | | 2790 | 1900 | 68 | 2000 | 71 | 5 | 40-140/30 |
| 205-99-2 | Benzo(b)fluoranthene | ND | | 2790 | 2010 | 72 | 2090 | 74 | 4 | 40-140/30 |
| 191-24-2 | Benzo(g,h,i)perylene | ND | | 2790 | 1800 | 65 | 1860 | 66 | 3 | 40-140/30 |
| 207-08-9 | Benzo(k)fluoranthene | ND | | 2790 | 1860 | 67 | 1960 | 69 | 5 | 40-140/30 |
| 101-55-3 | 4-Bromophenyl phenyl ether | ND | | 2790 | 2010 | 72 | 2190 | 78 | 9 | 40-140/30 |
| 85-68-7 | Butyl benzyl phthalate | ND | | 2790 | 2260 | 81 | 2430 | 86 | 7 | 40-140/30 |
| 100-51-6 | Benzyl Alcohol | ND | | 2790 | 1810 | 65 | 1900 | 67 | 5 | 40-140/30 |
| 91-58-7 | 2-Chloronaphthalene | ND | | 2790 | 1760 | 63 | 1890 | 67 | 7 | 40-140/30 |
| 106-47-8 | 4-Chloroaniline | ND | | 2790 | 1640 | 59 | 1670 | 59 | 2 | 40-140/30 |
| 218-01-9 | Chrysene | ND | | 2790 | 2080 | 75 | 2180 | 77 | 5 | 40-140/30 |
| 111-91-1 | bis(2-Chloroethoxy)methane | ND | | 2790 | 1620 | 58 | 1680 | 59 | 4 | 40-140/30 |
| 111-44-4 | bis(2-Chloroethyl)ether | ND | | 2790 | 2020 | 72 | 2060 | 73 | 2 | 40-140/30 |
| 108-60-1 | bis(2-Chloroisopropyl)ether | ND | | 2790 | 1570 | 56 | 1620 | 57 | 3 | 40-140/30 |
| 7005-72-3 | 4-Chlorophenyl phenyl ether | ND | | 2790 | 1920 | 69 | 2100 | 74 | 9 | 40-140/30 |
| 122-66-7 | 1,2-Diphenylhydrazine | ND | | 2790 | 1860 | 67 | 1990 | 70 | 7 | 40-140/30 |
| 121-14-2 | 2,4-Dinitrotoluene | ND | | 2790 | 1990 | 71 | 2170 | 77 | 9 | 40-140/30 |

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24969-MS | I72785.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |
| OP24969-MSD | I72786.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |
| MC125-5 | I72791.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |

The QC reported here applies to the following samples: Method: SW846 8270C

MC227-1

| CAS No. | Compound | MC125-5 ug/kg | Q | Spike ug/kg | MS ug/kg | MS % | MSD ug/kg | MSD % | RPD | Limits Rec/RPD |
|---|---|---|---|---|---|---|---|---|---|---|
| 606-20-2 | 2,6-Dinitrotoluene | ND | | 2790 | 1900 | 68 | 2040 | 72 | 7 | 40-140/30 |
| 91-94-1 | 3,3'-Dichlorobenzidine | ND | | 2790 | 1900 | 68 | 2160 | 76 | 13 | 40-140/30 |
| 53-70-3 | Dibenzo(a,h)anthracene | ND | | 2790 | 2020 | 72 | 2080 | 74 | 3 | 40-140/30 |
| 132-64-9 | Dibenzofuran | ND | | 2790 | 1730 | 62 | 1870 | 66 | 8 | 40-140/30 |
| 84-74-2 | Di-n-butyl phthalate | ND | | 2790 | 2130 | 76 | 2270 | 80 | 6 | 40-140/30 |
| 117-84-0 | Di-n-octyl phthalate | ND | | 2790 | 2320 | 83 | 2390 | 85 | 3 | 40-140/30 |
| 84-66-2 | Diethyl phthalate | ND | | 2790 | 2080 | 75 | 2240 | 79 | 7 | 40-140/30 |
| 131-11-3 | Dimethyl phthalate | ND | | 2790 | 1970 | 71 | 2100 | 74 | 6 | 40-140/30 |
| 117-81-7 | bis(2-Ethylhexyl)phthalate | 96.3 | J | 2790 | 2360 | 81 | 2550 | 87 | 8 | 40-140/30 |
| 206-44-0 | Fluoranthene | ND | | 2790 | 2040 | 73 | 2160 | 76 | 6 | 40-140/30 |
| 86-73-7 | Fluorene | ND | | 2790 | 1900 | 68 | 2070 | 73 | 9 | 40-140/30 |
| 118-74-1 | Hexachlorobenzene | ND | | 2790 | 1930 | 69 | 2060 | 73 | 7 | 40-140/30 |
| 77-47-4 | Hexachlorocyclopentadiene | ND | | 2790 | 985 | 35* a | 1020 | 36* a | 3 | 40-140/30 |
| 67-72-1 | Hexachloroethane | ND | | 2790 | 1440 | 52 | 1500 | 53 | 4 | 40-140/30 |
| 193-39-5 | Indeno(1,2,3-cd)pyrene | ND | | 2790 | 2000 | 72 | 2060 | 73 | 3 | 40-140/30 |
| 78-59-1 | Isophorone | ND | | 2790 | 1590 | 57 | 1640 | 58 | 3 | 40-140/30 |
| 90-12-0 | 1-Methylnaphthalene | ND | | 2790 | 3250 | 117 | 3400 | 120 | 5 | 40-140/30 |
| 91-57-6 | 2-Methylnaphthalene | ND | | 2790 | 1650 | 59 | 1690 | 60 | 2 | 40-140/30 |
| 88-74-4 | 2-Nitroaniline | ND | | 2790 | 2060 | 74 | 2190 | 78 | 6 | 40-140/30 |
| 99-09-2 | 3-Nitroaniline | ND | | 2790 | 2000 | 72 | 2080 | 74 | 4 | 40-140/30 |
| 100-01-6 | 4-Nitroaniline | ND | | 2790 | 2000 | 72 | 2120 | 75 | 6 | 40-140/30 |
| 91-20-3 | Naphthalene | ND | | 2790 | 1590 | 57 | 1640 | 58 | 3 | 40-140/30 |
| 98-95-3 | Nitrobenzene | ND | | 2790 | 1480 | 53 | 1510 | 53 | 2 | 40-140/30 |
| 62-75-9 | n-Nitrosodimethylamine | ND | | 2790 | 1520 | 55 | 1460 | 52 | 4 | 40-140/30 |
| 621-64-7 | N-Nitroso-di-n-propylamine | ND | | 2790 | 1690 | 61 | 1820 | 64 | 7 | 40-140/30 |
| 86-30-6 | N-Nitrosodiphenylamine | ND | | 2790 | 1970 | 71 | 2110 | 75 | 7 | 40-140/30 |
| 85-01-8 | Phenanthrene | ND | | 2790 | 1920 | 69 | 2040 | 72 | 6 | 40-140/30 |
| 129-00-0 | Pyrene | ND | | 2790 | 2170 | 78 | 2350 | 83 | 8 | 40-140/30 |
| 110-86-1 | Pyridine | ND | | 2790 | 1210 | 43 | 1200 | 42 | 1 | 40-140/30 |

| CAS No. | Surrogate Recoveries | MS | MSD | MC125-5 | Limits |
|---|---|---|---|---|---|
| 367-12-4 | 2-Fluorophenol | 61% | 62% | 71% | 30-130% |
| 4165-62-2 | Phenol-d5 | 63% | 64% | 73% | 30-130% |
| 118-79-6 | 2,4,6-Tribromophenol | 71% | 76% | 69% | 30-130% |

6.3.1

# Matrix Spike/Matrix Spike Duplicate Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| Sample | File ID | DF | Analyzed | By | Prep Date | Prep Batch | Analytical Batch |
|---|---|---|---|---|---|---|---|
| OP24969-MS | I72785.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |
| OP24969-MSD | I72786.D | 1 | 05/24/11 | KR | 05/18/1I | OP24969 | MSI2615 |
| MC125-5 | I72791.D | 1 | 05/24/11 | KR | 05/18/11 | OP24969 | MSI2615 |

The QC reported here applies to the following samples: Method: SW846 8270C

MC227-1

| CAS No. | Surrogate Recoveries | MS | MSD | MC125-5 | Limits |
|---|---|---|---|---|---|
| 4165-60-0 | Nitrobenzene-d5 | 55% | 56% | 62% | 30-130% |
| 321-60-8 | 2-Fluorobiphenyl | 62% | 66% | 69% | 30-130% |
| 1718-51-0 | Terphenyl-d14 | 82% | 87% | 87% | 30-130% |

(a) Outside control limits due to possible matrix interference. Refer to Blank Spike.

6.3.1

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# Semivolatile Internal Standard Area Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

| | | | |
|---|---|---|---|
| Check Std: | MSI2615-CC2552 | Injection Date: | 05/24/11 |
| Lab File ID: | I72776.D | Injection Time: | 09:00 |
| Instrument ID: | GCMS1 | Method: | SW846 8270C |

| | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT | IS 6 AREA | RT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Check Std | 118178 | 5.26 | 445084 | 6.54 | 234055 | 8.96 | 376856 | 11.47 | 299986 | 16.42 | 312474 | 18.95 |
| Upper Limit [a] | 236356 | 5.76 | 890168 | 7.04 | 468110 | 9.46 | 753712 | 11.97 | 599972 | 16.92 | 624948 | 19.45 |
| Lower Limit [b] | 59089 | 4.76 | 222542 | 6.04 | 117028 | 8.46 | 188428 | 10.97 | 149993 | 15.92 | 156237 | 18.45 |
| Lab Sample ID | IS 1 AREA | RT | IS 2 AREA | RT | IS 3 AREA | RT | IS 4 AREA | RT | IS 5 AREA | RT | IS 6 AREA | RT |
| OP24955-MB | 153378 | 5.26 | 568440 | 6.54 | 297503 | 8.96 | 479660 | 11.47 | 387181 | 16.42 | 341526 | 18.95 |
| OP24955-BS | 140870 | 5.26 | 535446 | 6.54 | 277035 | 8.96 | 446414 | 11.47 | 342886 | 16.42 | 366773 | 18.95 |
| OP24955-MS | 139930 | 5.26 | 525824 | 6.54 | 277549 | 8.96 | 445165 | 11.47 | 345773 | 16.42 | 371313 | 18.95 |
| OP24955-MSD | 147848 | 5.26 | 554120 | 6.54 | 290385 | 8.96 | 459811 | 11.47 | 353445 | 16.42 | 388876 | 18.95 |
| MC308-1 | 132184 | 5.26 | 484501 | 6.54 | 258544 | 8.95 | 440566 | 11.46 | 330844 | 16.41 | 284888 | 18.95 |
| ZZZZZZ | 153409 | 5.26 | 561511 | 6.54 | 296589 | 8.96 | 461408 | 11.47 | 408982 | 16.42 | 308039 | 18.95 |
| OP24969-MB | 152227 | 5.26 | 567432 | 6.54 | 291252 | 8.96 | 457772 | 11.46 | 357745 | 16.41 | 315600 | 18.95 |
| OP24969-BS | 165943 | 5.26 | 624067 | 6.54 | 333577 | 8.96 | 534063 | 11.47 | 392491 | 16.42 | 403507 | 18.95 |
| OP24969-MS | 183821 | 5.26 | 676299 | 6.54 | 356576 | 8.96 | 567617 | 11.47 | 416820 | 16.42 | 410087 | 18.95 |
| OP24969-MSD | 164911 | 5.26 | 620269 | 6.54 | 323647 | 8.96 | 514915 | 11.47 | 370794 | 16.42 | 387243 | 18.95 |
| ZZZZZZ | 177220 | 5.26 | 656644 | 6.54 | 339804 | 8.96 | 528019 | 11.47 | 400964 | 16.41 | 329662 | 18.95 |
| ZZZZZZ | 165221 | 5.26 | 602196 | 6.54 | 306328 | 8.96 | 483999 | 11.46 | 394431 | 16.41 | 328242 | 18.95 |
| ZZZZZZ | 174864 | 5.26 | 636432 | 6.54 | 328200 | 8.96 | 509839 | 11.47 | 387393 | 16.41 | 312701 | 18.95 |
| ZZZZZZ | 176693 | 5.26 | 650078 | 6.54 | 344254 | 8.96 | 538581 | 11.47 | 410327 | 16.41 | 313380 | 18.95 |
| MC125-5 | 182179 | 5.26 | 685552 | 6.54 | 353514 | 8.96 | 547600 | 11.46 | 393026 | 16.41 | 297337 | 18.95 |
| ZZZZZZ | 172782 | 5.26 | 641127 | 6.54 | 331545 | 8.96 | 513018 | 11.47 | 390379 | 16.41 | 338182 | 18.95 |
| ZZZZZZ | 179928 | 5.26 | 669912 | 6.54 | 345055 | 8.96 | 533580 | 11.46 | 417844 | 16.41 | 359657 | 18.95 |
| MC227-1 | 190870 | 5.26 | 704360 | 6.54 | 358758 | 8.96 | 543805 | 11.46 | 406130 | 16.41 | 357544 | 18.95 |
| ZZZZZZ | 211888 | 5.26 | 773442 | 6.54 | 385616 | 8.96 | 561015 | 11.47 | 392331 | 16.41 | 348772 | 18.95 |
| ZZZZZZ | 201852 | 5.26 | 758532 | 6.54 | 382110 | 8.96 | 590274 | 11.47 | 479147 | 16.42 | 553286 | 18.96 |
| ZZZZZZ | 186732 | 5.26 | 688716 | 6.54 | 352312 | 8.96 | 550141 | 11.47 | 441782 | 16.42 | 425478 | 18.95 |
| ZZZZZZ | 183885 | 5.26 | 689219 | 6.54 | 363006 | 8.96 | 570242 | 11.46 | 455618 | 16.41 | 427797 | 18.95 |

IS 1 = 1,4-Dichlorobenzene-d4
IS 2 = Naphthalene-d8
IS 3 = Acenaphthene-D10
IS 4 = Phenanthrene-d10
IS 5 = Chrysene-d12
IS 6 = Perylene-d12

(a) Upper Limit = +100% of check standard area; Retention time +0.5 minutes.
(b) Lower Limit = -50% of check standard area; Retention time -0.5 minutes.

6.4.1

# Semivolatile Surrogate Recovery Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

Method: SW846 8270C Matrix: SO

Samples and QC shown here apply to the above method

| Lab Sample ID | Lab File ID | S1 | S2 | S3 | S4 | S5 | S6 |
|---|---|---|---|---|---|---|---|
| MC227-1 | I72794.D | 68.0 | 67.0 | 65.0 | 59.0 | 65.0 | 83.0 |
| OP24969-BS | I72784.D | 67.0 | 66.0 | 74.0 | 60.0 | 65.0 | 84.0 |
| OP24969-MB | I72783.D | 67.0 | 64.0 | 68.0 | 59.0 | 65.0 | 84.0 |
| OP24969-MS | I72785.D | 61.0 | 63.0 | 71.0 | 55.0 | 62.0 | 82.0 |
| OP24969-MSD | I72786.D | 62.0 | 64.0 | 76.0 | 56.0 | 66.0 | 87.0 |

| Surrogate Compounds | Recovery Limits |
|---|---|
| S1 = 2-Fluorophenol | 30-130% |
| S2 = Phenol-d5 | 30-130% |
| S3 = 2,4,6-Tribromophenol | 30-130% |
| S4 = Nitrobenzene-d5 | 30-130% |
| S5 = 2-Fluorobiphenyl | 30-130% |
| S6 = Terphenyl-d14 | 30-130% |

6.5.1

6

New England ACCUTEST LABORATORIES

## General Chemistry

# QC Data Summaries



Includes the following where applicable:

- Percent Solids Raw Data Summary

# Percent Solids Raw Data Summary



Job Number: MC227
Account: SHELLWIC Shell Oil
Project: URSMOSTL:Roxana SVE / 21562593.00016 170 East Rand Ave. Hartford, IL

Sample: MC227-1 Analyzed: 18-MAY-11 by BF Method: SM21 2540 B MOD.
ClientID: SVE-4-10-12'

| | | |
|---|---|---|
| Wet Weight (Total) | 30.746 | g |
| Tare Weight | 22.1 | g |
| Dry Weight (Total) | 30.025 | g |
| Solids, Percent | 91.7 | % |

7.1

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